MEDICINAL PLANTS

OF

TENNESSEE.

DEPARTMENT OF AGRICULTURE.

T. F. P. ALLISON, Commissioner.

130
Gattinger
RETURN TO NEW STACKS

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THE

MEDICINAL PLANTS

OF

TENNNESSEE

EXHIBITING

THEIR COMMERCIAL VALUE

WITH AN

ANALYTICAL KEY, DESCRIPTIONS IN AID OF THEIR RECOGNITION, AND NOTES RELATING TO THEIR DISTRIBUTION, TIME AND MODE OF COLLECTION, AND PREPARATION FOR THE DRUG MARKET.

ARRANGED AND PUBLISHED UNDER THE DIRECTION OF

T. F. P. ALLISON,

COMMISSIONER OF AGRICULTURE.

BY

A. GATTINGER, M.D.

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LETTER OF TRANSMITTAL.

NASHVILLE, TENN., May 10, 1894.

SIR:— I have the honor to transmit herewith the manuscript of my treatise on the Medicinal Plants of Tennessee, prepared according to instructions received from you on April 6, 1894, for publication by your Department.

Respectfully,

A. GATTINGER, M.D.

HON. T. F. P. ALLISON, Commissioner of the Department of Agriculture of the State of Tennessee.

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SIGNS USED IN DESCRIPTION.

°, ′, ″. The sign of degrees (°) is used for feet; of minutes (′) for inches; and of seconds (″) for lines. Twelve lines to one inch; one line nearly two millimeter, (mm.)

A dash (–) separating words or figures denotes extremes of variation—the variation of value.

Fr. Fruit.

Fl. Flower.

ABBREVIATIONS

OF THE NAMES OF AUTHORS CITED IN THIS VOLUME.

Ait.	=	Aiton, William.
Baldw.		Baldwin, William.
Barton.		Barton, William P.
Beauv.		Palisot de Beauvois, A. M., T. J.
Benth.		Bentham, George.
Bernhard.		Bernhardi, Johann Jacob.
Bigel.		Bigelow, Jacob.
Blume.		Blumenbach.
Carr.		Carriere, E. Abel.
Decaisne & Planchon,		Decaisne, Joseph, and Planchon, Jules Emile.
DC.		De Candolle, Augustin Pyramus.
Desf.		Desfontaines, Rene Louihe.
Ell.		Elliott, Stephen.
Frœhl.		Frœhlich, Joseph Aloys.
Gœrtn.		Gœrtner, Joseph.
Gray.		Gray, Asa.
Haller.		Haller, Albert.
H. B. K.		Humboldt, Alexander von, Bonpland Aime, and Kunth, C. S.
Ives.		Ives.
Jacq.		Jacquin, Nicholaus Joseph.
Juss.		Jussieu, Antoine Laurent.
Ker.		Kerr, Michael.
Lam.		Lamarck, J. B. A. P. Mannet.
Lindl.		Lindley, John.
L., Linn.		Linnæus, Carolus or Carl von Linne.
Marsh.		Marshall, Humphrey.
Meyer.		Meyer, Ernst Heinrich.
Michx.		Michaux, Andre.
Mill.		Miller, Philip.
Mœnch.		Mœnch, Christian.

Nees.	=	Nees von Esenbeck.
Nutt.		Nuttall, Thomas.
Pers.		Persoon, Christian Hendrick.
Pursh.		Pursh.
Raf.		Rafinesque-Schmatz, C. S.
R. Br.		Brown, Robert.
Salisb.		Salisbury, Richard Anthony.
Schott.		Schott, August.
Small.		Small, A.
Smith.		Smith, William.
Torr. & Gray.		Torrey, John; Gray, Asa.
Tourn.		Tournefort, Joseph Pitton de.
Vent.		Ventenat, Etienne Pierre.
Walt.		Walter, Thomas.
Wang.		Wangenheim, A. J. von.
Web.		Weber, Freidrich.
Willd.		Willdenow, Carl Ludwig.

INTRODUCTORY.

STATE OF TENNESSEE.

DEPARTMENT OF AGRICULTURE,

OFFICE OF COMMISSIONER,

NASHVILLE, July 2, 1894.

Soon after entering upon the office of Commissioner of Agriculture, and upon looking over the extensive field of work assigned this department of the State Government, my attention was called to the fact that one important industrial resource of Tennessee had been entirely overlooked. It has so happened that within the past twenty years the medical profession throughout the entire Union has awakened to the efficacy of indigenous medicinal plants. During this period also immense capital has been invested in great pharmaceutical establishments for the purpose of examining and bringing into use new remedies from all parts of the world. It has long been known that Tennessee, both by reason of its topography and its geological location, is peculiarly rich in its Flora. Its climate may be described by calling it the water-shed between North and South. Hence, it abounds in plants belonging specially to both sections. Again, as having the highest mountain range East of the Rockies, much variety is added to its vegetable wealth. To in some degree utilize and render available to our people the rich stores of wealth locked up in the medicinal plants of Tennessee in such manner as not only to interest the ordinary citizen, but to meet the demand for specific knowledge upon the subject, this work has been undertaken, with the hope and confident expectation that the labor bestowed upon it will serve to diffuse among our people a better knowledge of their

State and its immense capabilities. Such knowledge can only result in a higher appreciation and a greater admiration for the wonderful resources of our highly favored commonwealth.

In furtherance of the object in view, I have esteemed myself fortunate in securing the aid of a scientific gentleman peculiarly well fitted to make a satisfactory report upon the "Medicinal Plants of Tennessee." Augustin Gattinger, M.D.,—a life-long practitioner of medicine, driven to America by the revolutionary troubles of 1848-49 in Germany, and since then dwelling in different portions of Tennessee, always an enthusiastic student of Botany in the field—has, by my request, prepared this work, which I commit to the public, hoping that many will be profited by its pages, and that it will prove of great commercial value to the State.

T. F. P. Allison, Commissioner.

PREFACE.

It is due to the good will, provident care and matured consideration of the Honorable Commissioner of Agriculture, T. F. P. Allison, that this treatise is issued by his Department.

The Commissioner was aware of the fact that, in the neighboring State of North Carolina, for some years, an extensive and profitable trade had been carried on by collecting native Medicinal Plants, and I was consulted by him as to the feasibility of a like enterprise in our State. I was much pleased to be able conscientiously to answer his question in the affirmative, and accepted his proposition to prepare this work, which is intended to bring to public notice the commercial value of the wild growing Medicinal Plants of the State of Tennessee, and to encourage capable and enterprising persons to engage in an intelligent, honorable and profitable business, thus utilizing one of our natural resources.

In view of the repleteness of our territory with medicinal plants, and their enormous consumption at home and abroad, I have often regretfully remarked upon the neglect of our people to realize a revenue from a source so patent and accessible. Freedom from preliminary investments, absence of competition and burdensome taxation, leave the field free for every one.

Another advantage is the optional expansion or interruption of which this business admits. It may be commenced on a small scale, carried on at one's leisure and gradually enlarged to great dimensions.

Activity and acute business talent are widely spread qualities, but are of no avail in this instance without previous instruction in elementary botany, such as ought to be taught in every high school or college. Those possessed of a liberal education can, in the absence of a teacher, by the study of Gray's botanical text-books, soon acquire as much proficiency in plant analysis as is needed to make the "Key to the Families" available. The glossary, which definitely explains the terms used in the description

of the medicinal species, gives also a good deal of botanical information. To dilate any further on general botany lies beyond the intention of this treatise.

Chapman's Flora of the Southern United States, or Gray's Manual, are indispensable aids for the determination of any plant that is not included in the Medicinal Plants. My Flora of Tennessee, published in 1887, would also facilitate analysis by narrowing the field of inquiry.

In answer to the vital question of profits, every one can make his own calculations by looking at the quotations of the list of prices paid for crude drugs to collectors, by the largest chemical manufacturing establishments and dealers in botanical goods. By the side of such quotations you can place the selling prices of crude botanical drugs in bulk, from recently published price-lists on the subject. The comparison of buying and selling prices may be useful in closing bargains.

In illustration of practical field work I may give a few instances. To begin at Nashville. Three miles from the eastern limits of the city grows Sweet Cecily (Osmorrhiza longistylis), copiously in moist copses and shady groves. The root, which may be quickly lifted from the loose leaf-mould in which it luxuriates, is quoted at 18c per pound. About 25 to 30 roots may make a pound, and several hundred could be collected in a few hours. To the right and left of the pike (Lebanon) stands any number of a two-foot high, homely weed, "White Vervain" (Verbena urticifolia). The root brings 8c per pound. It can be pulled out of the ground by taking hold of the stem. Several other collectable species, though in lesser numbers, grow thereabouts.

Wintergreen (Gaultheria procumbens) often covers whole mountain-sides in a dense sward. It may be cut with a scythe, dries easily and weighs rather heavy. Worth only 4½c per pound. It pays very well for the labor of cutting and baling it.

On the summits of the Balds and Smokies, I found in and around the edges of the laurels (Rhododendron Catawbiense), the tiny little Golden-thread (Coptis trifolia) covering the ground, often imbedded in the moss, whence it can be picked with the fingers. Whole plant (root and top), quoted at 25c per pound. Supply unlimited.

Sassafras and Persimmon nurseries are characteristic of soils of Tennessee, and bring little credit and profit to their owners. The bark of young persimmons brings 5c, and the bark of sassafras the same. The barks, acre for acre, would pay for clearing with a surplus for clover-seed and plaster.

The Hop-tree (Ptelea trifoliata), and the Canadian Sumach (Rhus Canadensis) abound in the glades; they are shunned by cattle and sheep, and serve the only benefit of shading the ground. The bark of the root of the former brings 15c, the latter 9c.

Elephant's Foot (Elephantopus tomentosus) is found everywhere along Walden's Ridge and the Cumberland plateau. The herb, dried, brings 10c per pound. I believe one person could collect 100 pounds in a day.

My statements in regard to the existence, distribution and comparative abundance or scarcity of every species enumerated, are based upon my own personal observation and lifetime experience, extending over the whole State. Every plant embraced in this treatise is moreover represented by herbarium-specimens in my collection, now in possession of the University of Tennessee, at Knoxville.

I have to acknowledge the adoption of the Analytical Key from the latest edition of Gray's Manual of Botany, and the specific descriptions as given by Gray, I. Lindley, DeCandolle, etc. The latest edition of the U. S. Dispensatory (1894) has also been consulted.

The information given in this work is prominently to the interest of the pharmacists of the State, and commends itself to the attention of the State Pharmaceutical Association, which at its meetings could devise a plan to initiate the collection of the Medicinal Plants.

The Author.

ANALYTICAL KEY TO THE ORDERS.

[This Key embraces all vasular plants of the Tennessee Flora. Divisions not paged are not represented with Medicinal species.]

Class I. DICOTYLEDONOUS PLANTS.

Dycotyledonous or exogenous plants have stems formed of bark, wood, and pith; the wood forming a zone between the other two, and increasing, when the stem grows from year to year, by the annual addition of a new layer to the outside, next to the bark. Leaves netted-veined. Embryo with a pair of cotyledons, or in Subclass II. with three or more in a whorl. Parts of flower in fours or fives.

Subclass I. ANGIOSPERMÆ. Pistil consisting of a closed ovary—cotyledons two.

Division I. POLYPETALOUS: the calyx and corolla both present; the latter of separate petals.

A. *Stamens numerous, at least more than* 10, *and more than twice the sepals or lobes of the calyx.*

1. *Calyx entirely free and separate from the pistil or pistils.*

	Page
Pistils numerous but cohering over each other in a solid mass on an elongated receptacle. . . Magnoliaceæ,	3–4
Pistils numerous, separate, but concealed in a hollow receptacle.	
Leaves opposite, entire; no stipules. . . Calycanthaceæ,	22
Leaves alternate with stipules. . . . Rosa, in Rosaceæ.	
Pistils several, immersed in hollows of the upper surface of a large top-shaped receptacle. Nelumbo, in Nymphæaceæ.	
Pistils more than one, separate, not inclosed in the receptacle.	
Stamens inserted on the calyx, distinct. . . . Rosaceæ,	31

Stamens united with the base of the petals, monadelphous. . . . . MALVACEÆ, 10
Stamens inserted on the receptacle.
Filaments much shorter than the anther: trees. ANONACEÆ, 5
Filaments longer than the anther.
Flowers diœcious; twiners with alternate leaves. . . . . MENISPERMACEÆ, 5
Flowers perfect; if climbers, the leaves opposite.
Leaves not peltate; petals deciduous. RANUNCULACEÆ, 1–3
Leaves peltate; petals persistent.
Brasenia, in NYMPHÆACEÆ.
Pistils several-lobed, the ovaries united below the middle.
RESEDACEÆ.
Pistils several, their ovaries cohering in a ring around the axis. . . . . MALVACEÆ, 10
Pistils strictly one as to the ovary; the styles or stigmas several.
Leaves punctate with transparent dots. . . HYPERICACEÆ, 9
Leaves not punctate with transparent dots.
Ovary simple, 1-celled. . . . . ROSACEÆ, 20
Ovary simple, 1-celled, with one parietal many-ovuled placenta.
Leaves 2–3-ternately compound or dissected. RANUNCULACEÆ, 2–3
Leaves peltate, simply lobed. Podophyllum, in BERBERIDACEÆ, 5
Ovary compound, 1-celled, with a central placenta.
PORTULACACEÆ, 9
Ovary compound, 1-celled, with two or more parietal placentæ.
Calyx caducous; juice milky or colored. . PAPAVERACEÆ, 7
Calyx deciduous, of 4 sepals. . . . CAPPARIDACEÆ.
Calyx persistent, of 3 or 5 sepals. . . . CISTACEÆ, 8
Ovary compound, several-celled.
Calix valvate in the bud, and
Persistent; stamens monadelphous: anthers 1-celled. . . . . MALVACEÆ, 10
Deciduous; anthers 2-celled. . . . TILIACEÆ, 11
Calyx imbricated in the bud, persistent.
Shrubs; stamens on the base of the petals.
TERNSTRŒMIACEÆ.
Aquatic or marsh herbs: ovules many.
On 5 placentæ in the axis. . . SARRACENIACEÆ, 6
On 8–10 partitions. . . . . NYMPHÆACEÆ, 6

2. *Calyx more or less coherent with the surface of the (compound) ovary.*

Ovary 8–30-celled; ovules many, on the partitions: aquatic. . . . . NYMPHÆACEÆ, 6
Ovary 10-celled; cells 1-ovuled. . Amelanchier, in ROSACEÆ.

Ovary, 2–5-celled.
Leaves alternate, with stipules. . . Pomeæ, in ROSACEÆ, 21
Leaves opposite, without stipules, . some SAXIFRAGACEÆ.
Leaves alternate, without stipules. . . . STYRACACEÆ, 22
Ovary, 1-celled, with the ovules parietal.
Fleshy plants with no true foliage; petals many. . CACTACEÆ, 24
Ovary 1-celled, with the ovules rising from the base. PORTULACACEÆ, 9

B. *Stamens of the same number as the petals and opposite them.*

Pistils 3–6, separate. Flowers diœcious. Woody vines. . . . . MENISPERMACEÆ, 5
Pistil only one.
Ovary 1-celled; anthers opening by uplifted valves. BERBERIDACEÆ, 5–6
Ovary 1-celled; anthers not opening by uplifted valves.
Style and stigma one; ovules more than one. PRIMULACEÆ, 50
Style one; stigmas three; sepals two; ovules several. . . . . PORTULACACEÆ, 9
Style twice or thrice forked; flowers monœcious. Crotonopsis, in EUPHORBIACEÆ.
Ovary 2–4 celled.
Calix-lobes minute or obsolete; petals valvate. . VITACEÆ, 15
Calyx 4–5-cleft, valvate in the bud; petals involute. RHAMNACEÆ. 15

C. *Stamens not more than twice as many as the petals; when of just the number of the petals then alternate with them.*

1. *Calyx free from the ovary; i. e. the ovary wholly superior.*

* *Ovaries 2 or more, separate.*

Stamens united with each other and with a large and thick stigma common to the two ovaries. ASCLEPIADACEÆ.
Stamens unconnected, on the receptacle, free from the calyx.
Leaves punctate with pellucid dots. . . . RUTACEÆ, 12–13
Leaves not pellucid-punctate.
Tree, with pinnate leaves. . Ailanthus, in SIMARUBACEÆ, 13
Low shrub, with pinnate leaves. Xanthorrhiza, in RANUNCULACEÆ, 3
Herbs, not fleshy. . . . . RANUNCULACEÆ, 3
Herbs, with thick, fleshy leaves. . . CRASSULACEÆ.
Stamens unconnected, inserted on the calyx.
Just twice as many as the pistils (flower symmetrical). CRASSULACEÆ, 23
Not just the number or twice the number of the pistils.
Leaves without stipules. . . . . SAXIFRAGACEÆ, 22

Leaves with stipules. . . . . ROSACEÆ, 20

* * *Ovaries* 2–5, *somewhat united at the base, separate above.*

Leaves punctate with pellucid dots. . . . . RUTACEÆ, 12–13
Leaves not pellucid-punctate.
Shrubs or trees with opposite leaves. . . . SAPINDACEÆ, 15
Terrestrial herbs; the carpels fewer than the petals.
SAXIFRAGACEÆ, 22

* * * *Ovaries or lobes* 3–5, *with a common style.* GERANIACEÆ, 11–12

* * * * *Ovary only one, and*

+ *Simple with one parietal placenta.* LEGUMINOSÆ, 17–20

+ + *Compound, as shown by the number of cells, placentæ, styles or stigmas.*

Ovary one-celled.
Corolla irregular; petals 4; stamens 6. . . FUMARIACEÆ, 7
Corolla irregular; petals and stamens 5. . . VIOLACEÆ, 8–9
Corolla regular or nearly so.
Ovule solitary; shrubs or trees; stigmas 3. ANACARDIACEÆ, 16
Ovules solitary or few; herbs. . Some anomalous CRUCIFERÆ.
Ovules more than one, in the center or bottom of the cell.
Petals not inserted on the calyx. . CARYOPHYLLACEÆ, 9
Petals on the throat of a bell-shaped or tubular calyx.
LYTHRACEÆ.
Ovules several or many; on two or more parietal placentæ.
Leaves punctate with pellucid and dark dots. HYPERICACEÆ, 9
Leaves beset with reddish gland-tipped bristles.
DROSERACEÆ.
Leaves neither punctate nor glandular.
Sepals 5; very unequal or only 3. . . CISTACEÆ, 8
Sepals and petals 4; stamens 6. Anomalous CRUCIFERÆ.
Sepals and petals 5; stamens 5 or 10.
Ovary and stamens raised on a stalk. PASSIFLORACEÆ, 24
Ovary sessile. . . . . SAXIFRAGACEÆ, 22
Ovary 2–several-celled.
Flowers irregular.
Anthers opening at the top,
6 or 8 and 1-celled; ovary 2-celled, 2-ovuled. POLYGALACEÆ, 17
10 and 2-celled; ovary 5-celled. Rhododendron in ERICACEÆ, 49
Anthers opening lengthwise.
Stamens 12 and petals 6 on the throat of a tubular inflated or gibbous calyx. . Cuphea, in LYTHRACEÆ.

Stamens 5-8 or 10 and petals hypogynous or nearly so.
Ovary 3-celled. . . . . SAPINDACEÆ, 15
Ovary 5-celled. . . Impatiens, &c., in GERANIACEÆ, 12
Flowers regular or nearly so.
Stamens neither just as many nor twice as many as the petals.
Triadelphous; petals 5. . . . . HYPERICACEÆ, 9
Tetradynamous (or rarely only 2 or 4) petals 4; pungent herbs. . . . . CRUCIFERÆ, 8
Distinct and fewer than the 4 petals. . . OLEACEÆ.
Distinct and more numerous than the petals. SAPINDACEÆ, 15
Stamens just as many or twice as many as the petals.
Ovules and seeds only 1 or 2 in each cell.
Herbs; flowers monœcious or diœcious. EUPHORBIACEÆ, 77
Herbs; flowers perfect and symmetrical.
Cells of the ovary as many as the sepals. GERANIACEÆ, 11
Cells of the (divided) ovary twice as many as the styles, sepals &c. . . . LINACEÆ.
Shrubs or trees.
Leaves 3-foliolate, pellucid-punctate. Ptelea, in RUTACEÆ, 13
Leaves palmately veined and fruit 2-winged or pinnate and fruit a berry. . SAPINDACEÆ.
Leaves pinnately veined, simple, not punctate.
Calyx not minute; pod colored, dehiscent; seeds enclosed in a pulpy aril. . CELASTRACEÆ, 13
Calyx minute, fruit a berry-like drupe. ILICINEÆ, 13–14
Ovules (and usually seeds) several or many in each cell.
Stipules between the opposite and simple leaves. ELATINACEÆ.
Stipules between the opposite and compound leaves, (but they are caducous). Staphylea, in SAPINDACEÆ.
Stipules none where the leaves are opposite.
Stamens 5; monadelphous in a 10-toothed tube or cup; leaves simple, all radical. Galax, in DIAPENSIACEÆ.
Stamens 10; monadelphous at the base. Leaflets 3, inversely heart-shaped. Oxalis, in GERANIACEÆ, 12
Stamens distinct, free from the calyx.
Style 1, undivided. . . . . ERICACEÆ, 47
Styles 2-5, separate. . . CARYOPHYLLACEÆ, 9
Stamens distinct, inserted on the calyx.
Styles 2 or 3, splitting into 2 in fruit. SAXIFRAGACEÆ, 22
Style 1; pod in the calyx, 1-celled. . LYTHRACEÆ.

2. *Calyx-tube adherent to the ovary, at least to its lower half.*

Tendril-bearing and often succulent herbs. . CUCURBITACEÆ.

Not tendril-bearing.
Ovules and seeds more than one in each cell.
Ovary 1-celled, many-ovuled from the base. PORTULACACEÆ, 9
Ovary 1-celled with 2 or 3 parietal placentæ. SAXIFRAGACEÆ, 22
Ovary 2–several-celled.
Anthers opening by pores at the apex; style 1.
MELASTOMACEÆ.
Anthers not opening by pores.
Stamens on a flat disk which covers the ovary.
CELASTRACEÆ, 14
Stamens inserted on the calyx,
Eight or four (rarely five), style 1. . ONAGRACEÆ, 24
Five or ten; styles 2–3, distinct. . SAXIFRAGACEÆ, 22
Ovules and seeds only one in each cell.
Stamens 10 or 5 (instead of many)—rarely in
Cratægus, in ROSACEÆ.
Stamens 2 or 8; style 1; stigma 2–4 lobed; herbs. ONAGRACEÆ, 24
Stamens 4 or 8; aquatics; styles or sessile stigmas 4. HALORAGEÆ.
Perfect stamens 4; styles 2; shrub. . . HAMAMELIDEÆ, 23
Stamens 4; style and stigmas 1; chiefly shrubs. CORNACEÆ, 28
Stamens 5; flowers in umbels, or rarely in heads.
Fruit dry, splitting in two at maturity; styles 2.
UMBELLIFERÆ, 25–27
Fruit berry-like; styles 2–5, separate or united. ARALIACEÆ, 27–28

DIVISION II. GAMOPETALOUS; calyx and corolla both present; the latter with its petals united more or less in one piece.

A. *Stamens more numerous than the lobes of the corolla.*

Ovary 1-celled with one parietal placenta. . LEGUMINOSÆ, 17
Ovary 1-celled with two parietal placentæ.
Adlumia, in FUMARIACEÆ.
Ovary 1-celled with the ovules at center or base. STYRACACEÆ.
Ovary 2-celled with a single ovule in each cell. POLYGALACEÆ, 17
Ovary 3-many celled.
Stamens free or nearly free from the corolla; style single.
ERICACEÆ, 47
Stamens free from the corolla; styles 5. Oxalis, in GERANIACEÆ, 12
Stamens inserted on the base or tube of the corolla.
Filaments monadelphous; anthers 1-celled; kidney-shaped.
MALVACEÆ, 97
Filaments 1–5-adelphous at base; anthers 2-celled.
Calyx free from the ovary. . . TERNSTROEMIACEÆ.

Calyx coherent with the ovary or with its base.
STYRACACEÆ.
Filaments wholly distinct; calyx free, persistent. EBENACEÆ, 50
Filaments in pairs at each sinus; anthers 1-celled.
CAPRIFOLIACEÆ, 28–29

B. *Stamens (fertile ones) as many as the lobes of the corolla and opposite them.*

Ovary 5-celled; corolla appendaged with scales inside. SAPOTACEÆ.
Ovary 1-celled; pod several–many-celled; style 1. PRIMULACEÆ, 50
Ovary 1-celled; utricle 1-seeded; styles 5. . PLUMBAGINACEÆ.

C. *Stamens as many as the lobes of the corolla and alternate with them, or fewer.*

1. *Ovary adherent to the calyx-tube (inferior).*

Tendril-bearing herbs; anthers often united. . CUCURBITACEÆ.
Tendrils none.
Stamens united by their anthers into a ring or tube.
Flowers in an involucrate head. . . . COMPOSITÆ, 31
Flowers separate, not involucrate; corolla irregular.
LOBELIACEÆ, 47
Stamens separate, free from the corolla or nearly so, as many as its lobes; stipules none; juice milky. . . . , . CAMPANULACEÆ.
Stamens separate, inserted on the corolla.
One to three, always fewer than the corolla lobes.
VALERIANACEÆ.
Four or five; leaves opposite or whorled.
Ovary 1-celled; flowers in a dense involucrate head.
DIPSACEÆ.
Ovary 2-5 celled.
Leaves whorled and without stipules.
Leaves opposite or whorled, and with stipules. . . . . } RUBIACEÆ, 29–30
Leaves opposite, without stipules (petioles, sometimes with stipule-like appendages). . . . CAPRIFOLIACEÆ, 28–29

2. *Ovary free from the calyx (superior).*

* *Corolla irregular; stamens (with anthers) 4, and didynamous, or only 2.*

Ovary 4-lobed, the style rising from between the lobes. LABIATÆ, 64
Ovary not lobed, the style from its apex. . . VERBENACEÆ, 63

Ovules numerous or at least as many as 2 in each cell.
Ovary and pod 1-celled,
With a free central placenta; stamens 2. . LENTIBULACEÆ.
With 2 or more parietal very many-seeded placentæ; stamens 4. . . . . OROBANCHACEÆ, 62
Ovary and fruit more or less 4-5 celled.. . PEDALIACEÆ.
Ovary and pod 2-celled, but the 2 placentæ parietal. BIGNONIACEÆ, 62
Ovary and pod 2-celled, placentaæ in the axis.
Seeds rarely few, not on hooks, with albumen. SCROPHULARIACEÆ, 61
Seeds few, borne on hook-like or other projections of the placentæ; no albumen. . ACANTHACEÆ.

* * *Corolla somewhat irregular; stamens (with anthers)* 5.

Stamens free from the corolla; anthers with their cells opening by a hole or chink at the top. Rhododendron, in ERICACEÆ, 49
Stamens inserted on the corolla.
Ovary deeply 4-lobed around the style. Echium, in BORRAGINACEÆ.
Ovary not lobed; pod many-seeded.
Filaments or some of them woolly. Verbascum, in SCROPHULARIACEÆ, 60
Filaments not woolly. . . . Hysocyamus SOLANACEÆ.

* * * *Corolla regular.*

\+ *Stamens as many as the lobes of the corolla.*

Ovaries 2, separate; their
Stigmas and styles sometimes united into one.
Filaments distinct; pollen in ordinary grains. APOCYNACEÆ, 52
Filaments monadelphous, polen in masses. ASCLEPIADACEÆ, 52–53
Ovary one, but deeply 4-lobed around the style (or 2-lobed in . . . . . HELIOTROPIUM.)
Leaves alternate. . . . . BORRAGINACEÆ, 58
Leaves opposite. . . . . Mentha, in LABIATÆ, 65
Ovary one, pod 2-lobed or 2-horned at summit. . LOGANIACEÆ, 53
Ovary one, not deeply-lobed.
One-celled, with ovules parietal or on 2 parietal placentæ.
Leaves entire. . . . . GENTIANACEÆ, 54–55
Leaves toothed, lobed, or pinnately compound. HYDROPHYLLACEÆ, 57
Two to ten-celled.
Leafless parasitic twining plants. Cuscuta, in CONVOLVULACEÆ.
Leaves opposite, their bases or petioles connected by stipules or a stipular line. . . LOGANIACEÆ, 53

Leaves when opposite without stipules.
Stamens free from the corolla or nearly so; style one. ERICACEÆ, 47
Stamens almost free from the corolla; style none. ILICINEÆ, 13
Stamens in the sinuses of the corolla; style 1. DIAPENSIACEÆ.
Stamens inserted on the tube of the corolla.
Four; pod 2-celled, circumcissile. . . PLANTAGINACEÆ, 71
Four; ovary 2–4-celled; ovules solitary. . VERBENACEÆ, 63
Five or rarely more.
Fruit of 2 or 4 seed-like nutlets. . . . BORAGINACEÆ, 58
Fruit a few-sceded pod.
Calyx 5-cleft; style 3-lobed or cleft. . POLEMONIACEÆ, 57
Sepals 5; styles 1 or 2, entire or 2-cleft; seeds large, only one or two in a cell. . CONVOLULACEÆ, 59
Fruit a many seeded pod or berry.
Styles 2. . . Hydrolea, in HYDROPHYLLACEÆ.
Style single . . . . . SOLANACEÆ, 59

\+ + *Stamens fewer than the lobes of the corolla.*

Stamens 4, didynamous.
Ovary 2-celled; the cells several-seeded. . . ACANTHACEÆ.
Ovary 2–4 celled; the cells 1-seeded. . . VERBENACEÆ, 63
Stamens only 2 with anthers; ovary 4-lobed.
Lycopus, in LABIATÆ. 66
Stamens 2, rarely 3; ovary 2-celled.
Low herbs; corolla scarious, withering on the pod.
PLANTAGINACEÆ, 71
Herbs; corolla rotate, or somewhat funnel-form, and slightly irregular. . Veronica, in SCROPHULARIACEÆ, 63
Shrubs or trees; corolla perfectly regular. . OLEACEÆ, 51

DIVISION III. APETALOUS; corolla (and sometimes calyx) wanting.

Flowers not in catkins.

1. *Ovary or its cells containing many ovules.*

Ovary and pod inferior (i. e. calyx-tube adherent to the ovary).
Six-celled; stamens 6–12. . . . ARISTOLOCHIACEÆ, 74
Four celled; stamens 4. . . Ludwigia, in ONAGRACEÆ.
One-celled, with parietal placentæ.
Chrysosplenium, in SAXIFRAGACEÆ.
Ovary and pod wholly naked (there being no calyx).
Two-celled, 2-beaked; flowers capitate; tree. HAMAMELIDEÆ, 23
Two-celled, many-ribbed; aquatic herb. . PODOSTEMACEÆ.

Ovary and pod superior, i. e. free from the calyx.
Five-celled and 5-beaked, opening across the beaks, which fall off at maturity; stamens 10. Penthorum, in CRASSULACEÆ, 23
Three-celled and 3-valved, or 3–5-celled and circumcissile. FICOIDEÆ.
Two-celled or 1-celled; placentæ central.
Stamens inserted on the throat or tube of the calyx.
Stamens inserted on the receptacle or the base of the calyx, opposite the sepals when of the same number. LYTHRACEÆ.
One-celled with one parietal placenta. / Ovaries 2 or more, separate, simple. } RANUNCULACEÆ.

2. *Ovary or its cells containing* 1 *or* 2, *rarely* 3 *or* 4, *ovules.*

* *Pistils more than one and distinct or nearly so.*

Stamens inserted on the calyx; leaves with stipules. . ROSACEÆ, 20
Stamens inserted on the receptacle.
Leaves pellucid with punctate dots. Xanthoxylum in RUTACEÆ, 12
Leaves not dotted,
Calyx present, and usually colored or petal-like RANUNCULACEÆ, 2
Calyx absent, flowers entirely naked, perfect, spiked. PIPERACEÆ, 77

* ⊣ *Pistil one, either simple or compound.*

Ovary partly inferior, the calyx coherent to its lower half, 2-celled; styles 2, stamens many. . . . HAMAMELIDEÆ, 23
Ovary totally inferior (in perfect or pistillate flowers).
Aquatic herb; ovary 3–4-celled. . . . HALORAGEÆ.
Mostly woody plants; style or stigma one, entire; ovary 1-celled.
Stigma running down one side of the style. Nyssa in CORNACEÆ.
Stigma terminal, with or without a style,
Parasitic on the branches of trees; anthers sessile. LORANTHACEÆ, 76
Not parasitic above ground; anthers on filaments. SANTALACEÆ.
Ovary really free from the calyx, but permanently invested by its tube, or the base of it, so as to seem inferior.
Herbs with the calyx colored like a corolla:
Leaves opposite, simple . . . . NYCTAGINACEÆ.
Leaves alternate, pinnate . . Poterium in ROSACEÆ.

Ovary plainly free from the calyx, which is sometimes wanting.
Stipules (ocreæ) sheathing the stem at the nodes:
Tree, calyx none; flowers monœcious in heads. PLATANACEÆ.
Herbs; calyx present and commonly petal-like. POLYGONACEÆ, 72
Stipules not sheathing the stem, or none:
Aquatic herbs, submerged or nearly so:
Leaves whorled and dissected; style single.
CERATOPHYLLACEÆ.
Leaves opposite, entire; styles 2, ovary 4-celled.
HALORAGEÆ.
Not aquatic, herbs:
Ovary 10-celled; berry 10-seeded . . PHYTOLACCACEÆ, 72
Ovary 3 (rarely 1–2)-celled; juice usually milky.
EUPHORBIACEÆ, 77
Ovary 1-celled; juice not milky.
Style, if any, and stigma only one; leaves simple; no scarious bracts around the flowers. . URTICACEÆ, 78
Style or stigma 2 or 3; embryo coiled or curved.
Stipules not scarious, leaves palmately cleft or palmately compound. Cannabineæ in URTICACEÆ, 78
Stipules scarious (or none); leaves opposite.
ILLECEBRACEÆ.
Stipules none, but flowers with scarious bracts.
AMARANTHACEÆ.
Stipules and scarious bracts none. CHENOPODIACEÆ, 71
Shrubs or trees:
Ovules a pair in each cell of the ovary.
Fruit 2-celled, a double samara. . . Acer in SAPINDACEÆ.
Fruit a 1-celled and 1-seeded samara or drupe. . OLEACEÆ, 51
Ovules single in each cell of the
Three-celled ovary; leaves broad. . . RHAMNACEÆ, 15
One-two-celled ovary; styles or stigmas 2-cleft. URTICACEÆ, 79
One-celled ovary; style and stigma single and entire.
Anthers opening longitudinally. . . THYMELÆACEÆ.
Anthers opening by uplifted valves. . . LAURACEÆ, 75

B. *Flowers monœcious or dicœcious, one or both sorts in catkins.*

1. *Only one sort of flowers in catkins or catkin-like heads.*

Fertile flowers in a short catkin, head or strobile. URTICACEÆ, 78
Fertile flowers single or clustered, sterile in slender catkins (except in Fagus).
Leaves pinnate; fertile flowers and fruit naked. JUGLANDACEÆ, 80
Leaves simple; fertile flowers 1–3 in an involucre or cup.
CUPULIFERÆ, 81

2. *Both sterile and fertile flowers in catkins or catkin-like heads.*

Ovary and pod 2-celled, many seeded.
Liquidambar in HAMAMELIDEÆ, 23
Ovary and pod 1-celled, many seeded; seeds furnished with a downy tuft on one end. . . . . SALICACEÆ, 84
Ovary 1–2-celled, only one ovule in each cell; fruit 1-seeded.
Parasitic on trees; fruit a berry. . . . LORANTHACEÆ, 76
Trees or shrubs not parasitic.
Calyx regular, in the fertile flower, succulent in fruit.
URTICACEÆ, 79
Calyx none, or rudimentary and scale-like.
Style and stigma one, simple; the flowers in heads.
PLATANACEÆ.
Styles or long stigmas 2.
Fertile flowers 2 or 3 at each scale of the catkin.
CUPULIFERÆ, 82

SUBCLASS II. GYMNOSPERMÆ. Pistil an open scale or altered leaf, bearing naked ovules on its margin or its upper surface.
CONIFERÆ, 85

CLASS II. MONOCOTYLEDONOUS PLANTS.

Stems without central pith or annual layers, but having the woody fibres distributed irregularly through them (a transverse slice showing the fibres as dots scattered through the cellular tissue). Embryo with a single cotyledon and the early leaves always alternate. Parts of the flower usually in threes (never in fives), and the leaves mostly parallel-veined. All herbaceous except Smilax.

A. SPADICEOUS DIVISION. *Flowers aggregated on a spadix or fleshy axis, or sometimes scattered, destitute of calyx or corolla (excepting some Araceæ and Najadaceæ, where, however, they are on a spadix), and also without glumes (husky scales). Leaves sometimes with netted veins.*

Little floating aquatics, with no distinction of stem and foliage.
LEMNACEÆ.
Immersed aquatics, branching and leafy. . . NAJADACEÆ.
Reed-like or flag-like marsh herbs with linear and sessile nerved leaves; flowers in spikes or heads.

Flowers monœcious, and quite destitute of floral envelopes.
TYPHACEÆ.
Flowers perfect, on a lateral spadix; sepals 6. Acorus, in ARACEÆ, 93
Terrestrial or marsh plants; leaves mostly with a distinct netted-veined blade, petioled. . . . . ARACEÆ, 92

B. PETALOIDEOUS DIVISION. *Flowers not collected on a spadix, furnished with floral envelopes (perianth), answering to calyx or to both calyx and corolla, either herbaceous or colored and petal-like (wholly glumaceous in Juncaceæ).*

1. *Perianth adhering to the whole surface of the ovary.*

Flowers dicœcious (or rarely perfect), regular.
Aquatics; ovules and seeds several or numerous.
HYDROCHARIDACEÆ.
Twiners; ovules and seeds one or two in each cell. DIOSCOREACEÆ, 88
Flowers perfect; ovules and seeds usually numerous.
Stamens only one or two; flowers irregular, gynandrous.
ORCHIDACEÆ, 86
Stamens three.
Anthers extrorse, opening lengthwise. . . IRIDACEÆ, 88
Stamens six; flowers usually on a scape from a bulb.
AMARYLLIDACEÆ, 88

2. *Perianth adhering to the base or lower half of the ovary.*

Perianth woolly or roughish-mealy; leaves often equitant.
HÆMADORACEÆ, 87
Perianth smooth, the leaves grass-like.
Stenanthium, &c., in LILIACEÆ.

3. *Perianth wholly free from the ovary.*

Pistils numerous or few in a head or ring. . . ALISMACEÆ, 94
Pistil one, compound (cells or placentæ mostly three).
Perianth not glumaceous or chaffy, flowers not in dense heads.
Stamens (in Maianthemum 4), similar and perfect.
Marsh herbs; carpels nearly distinct or serrating closed from the axis, seed without albumen. Juncagineæ in NAJADACEÆ.
Terrestrial, not rush-like; seeds with albumen.
Perianth of similar divisions or lobes, mostly colored.
LILIACEÆ, 89
Perianth of 3 foliaceous and green sepals and 3 colored withering-persistent petals. . . Trillium in LILIACEÆ, 91

Perianth of 3 persistent green sepals and 3 ephemeral deliquescent petals. . . . . COMMELINACEÆ.
Stamens 6, dissimilar, or only three with perfect anthers. . . . . COMMELINACEÆ.
Perianth tubular, 6-lobed, . . . PONTEDERIACEÆ.
Perianth wholly glumaceous, of 6 similar divisions. JUNCACEÆ, 92
Perianth partly glumaceous or chaff-like; flowers in very dense heads; rush-like or aquatic.
Flowers perfect; inner perianth of 3 yellow petals.
Perfect stamens and plumose sterile filaments, each 3; pod 1-celled, many-seeded on 3 parietal placentæ. XYRIDACEÆ.

C. GLUMACEOUS DIVISION.—*Flowers destitute of the proper perianth, except sometimes small scales or bristles, but covered by scale-like bracts or glumes.*

Glume, a single scale-like bract, with a flower in its axil. CYPERACEÆ.
Glumes in pairs, of two sorts. . . . . GRAMINEÆ, 94

CLASS III. CRYPTOGAMOUS ACROGENS. FLOWERLESS PLANTS.

Destitute of stamens or pistils, in fructification producing spores instead of seeds. Axis distinct (stem and branches) growing from the apex only, and furnished for the most part with distinct leaves; reproduction by means of antheridia and archegonia, sometimes also by gemmation.

SUBCLASS I. PTERIDOPHYTES. Stems (and foliage when present) containing both woody fibre and vessels; antheridia or archegonia, or both, borne on a minute prothallus, which is developed from the spore on germination.

Spores of only one kind; spore-cases
Borne beneath shield-shaped scales in a terminal spike; stems naked; sheathed at the nodes. . . . EQUISETACEÆ.
On the back or margin of fronds, circinate in vernation. FILICES, 95
Bivalvular; in special spikes or panicles; fronds erect in vernation, from short, erect rootstocks. . OPHIOGLOSSACEÆ. 97
Solitary in the axils of leaves, 2–3-valved; low, long-

stemmed, moss-like evergreens; leaves small, in 4–16 ranks. . . . . LYCOPODIACEÆ, 97
Spores of 2 kinds, large and small; spore-cases solitary in the axils of small 4-ranked leaves, or in the bases of linear radical leaves. . . SELAGINELLACEÆ.

SUBCLASS II. BRYOPHYTES: with cellular tissue only.

Spores developed in a capsule, opening by a lid. . . MUSCI, 98

DESCRIPTION OF MEDICINAL PLANTS.

RANUNCULACEÆ. (Crowfoot Family.)

Anemone Hepatica. L. Liverwort. (Hepatica triloba Chaix). and var. acutiloba, DC. Involucre 3-leaved, sepals petal-like, blue; flowers single on hairy scapes. Leaves radical with three ovate, obtuse, or in var. acutiloba, pointed lobes. Mountains of East Tennessee, and var. acutiloba hills of Middle Tennessee. Abundant; fl. March; the leaves collected April following.

Ranunculus Flamula, L. Smaller Spearwort. Herbaceous perennial, 1-2° high, with reclining or ascending stem, rooting below, leaves lanceolate or linear, or the lowest ovate-oblong to lanceolate, entire or nearly so, mostly petioled 1–2′ long; petals 5–7, much longer than the 5-sepaled calyx, bright yellow, carpels small, flattish but turgid, mucronate with a short abrupt point. Growing in wet places, at the margin of ponds. Fl. June. Collect the herb.

Ranunculus sceleratus, L. Cursed Crowfoot. Annual, glabrous; root-leaves 3-lobed, rounded; lower stem-leaves 3-parted, the lobes obtusely cut and toothed, the uppermost almost sessile, with the lobes oblong-linear and nearly entire; carpels barely mucronate, very numerous, in oblong or cylindrical heads; petals scarcely exceeding the calyx. Stem thick and hollow, 1° high; juice acrid and blistering, leaves thickish; flowers small, pale yellow. Fl. June–August. In ditches and ponds. Collect the herb.

Ranunculus repens, L. Creeping Crowfoot. Low, hairy or nearly glabrous, stem ascending, some procumbent, forming

long runners; leaves 3-divided, the divisions all stalked, or at least the terminal one, broadly wedge-shaped or ovate, unequally 3-cleft or parted and variously cut, never pinnately-compound; frequently white-variegated, or spotted. In low, waste grounds; not frequent. Fl. June–August. The herb is collected in flowering time.

Ranunculus bulbosus, L. BULBOUS CROWFOOT or BUTTERCUPS. Hairy, stem erect, from a bulbous or bulb-like base, 1° high. Radical leaves 3-divided; the lateral divisions sessile, the terminal stalked and 3-parted, all wedge-shaped, cleft and toothed; peduncles furrowed; petals round, wedge-shaped at base; calyx reflexed; carpels tipped with a very short beak. Leaves appearing as if pinnate; petals often 6–7, deep glossy yellow, the corolla more than one inch broad. Only once found near Nashville, probably introduced with garden seeds.

Coptis trifolia Salisb. THREE-LEAVED GOLDTHREAD. Low smooth perennial, with ternately divided root-leaves and small white flowers on 1-flowered scapes. Leaflets 3, obovate-wedge-form, sharply toothed, obscurely 3-lobed. Sepals 5–7, petal-like, deciduous. Petals 5–7, small, club-shaped, hollow at the apex. Stamens 15–25. Pistils 3–7, on slender stalks. Pods divergent, membranaceous, pointed with the style, 4–8 seeded. Fl. May. The whole plant.

Hydrastis Canadensis. L. YELLOW PUCCOON. GOLDEN SEAL. Herbaceous perennial, with a thick, knotty, yellow underground stem or root, from which springs up a simple stem, one foot high, bearing near the top two or three rounded, hand-shaped leaves, the upper leaf growing close up the stem, while the lower has a longish stalk. At the top of the stem is a solitary small, greenish-white inconspicuous flower, destitute of petals; the three-leaved calyx quickly falls away, leaving only the stamens and pistils. The fruit is about the size of, and greatly resembles, a raspberry in its appearance, having juicy flesh of a bright, crimson color. Open oak-barrens of Middle Tennessee. Frequent. The rhizome with

rootlets; fl. April–May. Collect in fall. Much in demand at present.

Xanthorrhiza apiifolia, L'Her. SHRUB YELLOWROOT. An undershrub with stalked pinnate or bipinnate leaves with cut leaflets and small dull purple flowers in axillary racemes, of five deciduous sepals, five petals much smaller than the sepals, 5–10 stamens and 5–15 ovaries. The follicles (fruit) are small, usually one-sided. Fl. May. The rhizome, collected in September. Along mountain streams in the Cumberlands and Alleghanies; abundant.

Cimicifuga racemosa, Nutt. BLACK SNAKEROOT. BLACK COHOSH. Perennial herb with 2–3 ternately divided leaves, the leaflets cut-serrate and white flowers in elongated wand-like racemes from a thick knotted rootstock; pistils solitary, sometimes 2–3 sessile, forming dehiscent pods in fruit. Frequent in the hill-lands of Middle Tennessee. Fl. June–July. Collect in fall.

Actæa alba, Bigel. WHITE BANEBERRY. WHITE COHOSH. Perennials with ample 2–3 ternately compound leaves, the ovate leaflets sharply cleft and toothed, with a short and thick terminal raceme of white flowers; sepals 4–5, deciduous, petals 4–10, pistil single, fruit a many-seeded white berry. Fl. May. Rich woodlands, throughout and abundant. Collect the rootstock in fall.

Actæa spicata, L. var. **rubra**, Ait. RED BANEBERRY. Very much like the former in all parts, but bearing red berries. Flowering and collected like the former, in similar localities.

MAGNOLIACEÆ. (MAGNOLIA FAMILY.)

Magnolia glauca, L. SWEET BAY. Shrub 4–20 feet high, leaves oval to broadly lanceolate, 3–6′ long, glaucous beneath; flower globular white, 2′ long, very fragrant; petals broad, cone of fruit small, oblong. Madison County, West Tennessee. May. The bark.

Magnolia acuminata, L. CUCUMBER-TREE. Tree, 60–90° high.

Leaves thin, oblong, pointed, green and a little pubescent beneath, 5–10′ long; flower oblong bell-shaped, glaucous-green, tinged with yellow; cone of fruit 2–3′ long, cylindrical. Fl. May. Over the State. The flowers.

Magnolia macrophylla, Michx. GREAT-LEAVED MAGNOLIA. Tree 20–30 feet high, leaves ovate oblong, 1–3° long, cordate at the narrowed base, pubescent and white beneath, with a purple spot at base; petals ovate, 6′ long; cone of fruit ovoid. Cumberland and Alleghany Mountains. The bark.

Magnolia umbrella, Lam. Small tree, with leaves crowded on the summit of the flowering branches in an umbrella-like circle, 1–2° long, oblong lanceolate, pointed at both ends; petals obovate, oblong, 4–5′ long. Small tree. In the Cumberland Mountains. Fl. May. The bark.

Magnolia Fraseri, Walt. EAR-LEAVED UMBRELLA-TREE. Slender tree 30–40° high, leaves auriculate at the base, glabrous, 8–20′ long; petals obovate-spatulate. Smoky Mountains. Flowers June–July. The bark. The bark of all the magnolias from young trees.

Liriodendron tulipiferum, L. YELLOW POPLAR. TULIP-TREE. The most beautiful of our trees, attaining its highest perfection of growth in the Mississippi bottoms, where specimens have occurred attaining an altitude of about 200° by 8–9° diameter 6 feet above ground. The bark of young trees, which alone is used for medicinal preparations, is smooth and gray, but in old trees it forms a reticulation of prominent ridges with deeply depressed intervals. The leaves are smooth, bright green, truncate and four-lobed, and provided with large, opposite flat stipules, which serve the function of scales to the young buds, ultimately deciduous. The flowers are large, of size and shape of a tulip; they have a calyx of three deciduous segments, which are turned down, and a corolla of six erect petals forming a cup. Both sepals and petals are greenish, variegated with yellow and orange. The cone of fruit of the tulip-tree is 3′ long, and does not split when ripe, as those of the magnolia do.

ANONACEÆ. (Custard-Apple Family.)

Asimina triloba, Dunal. Papaw. Shrub or small tree. Calyx of 3 sepals and a corolla of 6 petals, in two rows; petals thickish, purple. Fruit 3–4′ long, pulpy, edible. Fl. April. Along banks of streams; common.

MENISPERMACEÆ. (Moonseed Family.)

Menispermum Canadense, L. Moonseed. Woody climbers with leaves peltate near the edge, 3–7 angled or lobed. Flowers panicled, with 4–8 sepals in two rows; 6–8 petals, the males with 12–24 stamens. The fruit is a compressed drupe, black, with a bloom, ripe in September. Seed forming a crescent. Collect the rhizome.

BERBERIDACEÆ. (Barberry Family.)

Caulophyllum thalictroides, Michx. Blue Cohosh. Pappoose-root. Perennial, glabrous herb, with matted knotty root-stocks from which spring up single leaves on 1–2½° long stems, and panicles of yellowish-green flowers, which appear while the leaf is yet small. Leaves 3-ternately compound. Fruit deep-blue globose berries, contracted below so as to approach pear-shaped. Whole plant glaucous when young. Fl. April. Rich ravines and mountain sides over the State. Very abundant on the summits of some of the Cumberland high ridges. The rhizome, collected in fall.

Jeffersonia diphylla, Barton. Twin-leaf, Rheumatism-root. A perennial, glabrous herb, with matted, fibrous roots, long petioled root-leaves, parted into two half-ovate leaflets and simple naked, 1-flowered scapes, 6–8′ high; flower white, 1′ broad, sepals 4, fugacious. Petals 8, oblong, flat, stamens 8. Fruit a pear-shaped pod, opening halfway round horizontally, the upper part making a lid. Rich woodlands. Fl. April–May; frequent. The rhizome, collected in fall.

Podophyllum peltatum, L. May-Apple. Herbaceous plants with thick, creeping rootstocks, from which rises in spring a stem bearing two leaves, with a solitary flower between them.

Flowerless stems terminated by a large, round 7–9 lobed leaf, peltate in the middle like an umbrella. Flowering stems bearing two one-sided leaves, with a stalk fixed near their inner edge; the nodding, white flower nearly 2′ broad. Sepals 6, deciduous, petals 6 or 9, obovate. Stamens twice as many as petals. Fruit a large fleshy berry. Rich woodlands; very common. Fl. April. Rhizome, collected in autumn.

NYMPHÆACEÆ. (Water-Lily Family.)

Nymphæa odorata, Ait. Castalia odorata, Green. Water-Lily. Aqueous plant inhabiting stagnant waters, the single flowers and leaves floating on the surface, connected by cylindrical leafstalks and peduncles with the tuberous roots, embedded in the bottom mud. Sepals 4, green outside; petals numerous, in many rows, the innermost gradually passing into the stamens, imbricately inserted all over the ovary. Stamens very numerous, the outer with dilated filaments. Ovary 12–30 celled, the concave summit tipped with a globular projection at the center. Leaves orbicular, cordate-cleft at the base. Fruit depressed globular, maturing under water. West Tennessee. Flowers in summer. Tuberous root collected in spring, before flowering.

Nuphar advena, Ait. Yellow Pond-Lily. Spatterdock. Habitus of the former. Leaves with a deep sinus at the base, from a creeping, cylindrical rootstock. Sepals 6, unequal, petals shorter than the stamens and resembling them, thick and fleshy, truncate; stigma nearly entire, 12–24 rayed. Ovary and fruit ovate, ripening above water; flowers yellow. Very common in the lower course of mountain streams. East Tennessee and West Tennessee. Flowers in summer. Rootstock collected at any time.

SARRACENIACEÆ. (Pitcher-Plants.)

Sarracenia purpurea, L. Side-Saddle Flower. Pitcher-Plant. Leaves pitcher-shaped, ascending, curved, broadly winged. The hood erect, open, round, heart-shaped. Sepals

5, with 3 bractlets at the base, colored, persistent. Petals 5, oblong or obovate, incurved, deciduous. Scape naked, one-flowered, flowers purple, nodding. Fl. June. Rhizome, collected in fall. West Tennessee.

PAPAVERACEÆ. (Poppy Family.)

Sanguinaria Canadensis, L. Bloodroot. Herbaceous plant about 6′ high, has a thick branching rootstock which creeps along under ground, and in early spring sends up from the ends of each of the little side-branches a single long-stalked leaf, and another stalk, bearing a single flower. The leaf is wrapped round the flower-bud when it rises out of the ground, and is bluntly 5–9 lobed, roundish at first, but afterward kidney-shaped. The flowers are large and conspicuous, and have 12 sepals, from 8–12 white petals, about 24 stamens with filaments shorter than the petals, and a short style. The fruit is an oblong 2-valved capsule. Abundant in rocky woodlands with rich leaf-mould. Fl. March–April. Rootstock collected in fall.

Argemone Mexicana, L. Mexican Poppy. Annual, herbaceous, with prickly bristles and yellow juice. Leaves sessile, sinuate lobed, and with prickly teeth, often blotched with white; flowers yellow, sometimes white, short peduncled. Sepals 2–3, prickly. Petals 4–6, stigma sessile. Pod oblong, prickly, opening by 3–6 valves at the top. Waste places near buildings, vacant lots in towns. Frequent in Nashville. The herb is used.

FUMARIACEÆ. (Fumitory Family.)

Dicentra Canadensis, DC. Squirrel Corn. Low, stemless perennial, with ternately compound and dissected leaves, and racemous, nodding flowers. Subterraneous shoots bearing grain-like tubers (resembling peas or grains of Indian corn, yellow); petals slightly cohering into a heart-shaped 2-spurred corolla, the spurs very short and rounded; crest of the inner petals conspicuous, projecting. Flowers greenish-white,

tinged with rose, with the fragrance of hyacinths. Fl. April. Light rich soil in Cumberland Mountains; in large quantities, wherever it occurs. Collect the tubers.

CRUCIFERÆ. (Mustard Family.)

Nasturtium officinale, R. Br. Aquatic herb, perennial, preferring cool springs and running water. Stems spreading and rooting; leaves pinnate; leaflets 3–11, roundish or oblong, nearly entire; flower cruciform, tetradynamous, sepals and petals 4; stamens 6, two of them shorter. Fruit a linear pod, 6–8″ long, ascending, on slender widely spreading pedicels. Fl. May. Over the State, frequent. Collect the herb in or before flowering.

Capsella Bursa-pastoris, Mœnch. Shepherd's Purse. A homely weed 8–12′ high, annual, with small white inconspicuous flowers, root leaves clustered, pinnatified, stem-leaves arrow-shaped, sessile. Pod obcordate-triangular, flattened contrary to the narrow partition. Everywhere. Flowers in early spring. The whole plant, collected in flowering season.

CISTACEÆ. (Rock-rose Family.)

Helianthemum Canadense, Michx. Rock-rose. Frost Weed. Low, prostrate, subshrubby plants, preferring silicious soil and open sunny spots, with golden yellow 5-petaled flowers, which are solitary; the small secondary flowers clustered in the axils of the small leaves, which are hairy pubescent on the lower side. The larger flowers are 1′ wide, expanded and deciduous after they had but once expanded in sunshine. Dry, sterile hillsides in East Tennessee. April–May. The herb, collected in flower.

VIOLACEÆ. (Violet Family.)

Viola pedata, L. Birdfoot Violet. Low, perennial; the flowers on short peduncles directly from the root. Leaves 3–5 divided, the lateral divisions 2–3 parted, all linear or narrowly spatulate, sometimes 2–3 toothed or cut at the

apex, flowers 1′ broad, pale or deep lilac, purple or blue. The variety V. bicolor, Pursh, is very handsome, resembling a pansy. The two upper petals deep violet or purple, velvety. It has become introduced into gardens as an ornamental plant. Growing on shale or silicious ground over the State. Flowers in early April to May. Roots, collected in fall.

HYPERICINEÆ. (St. John's-wort Family.)

Hypericum perforatum, L. Common St. John's-wort. Perennial herb, 15–20 inches high, with yellow flowers disposed in corymbs with 5 sepals and 5 oblique petals, which are convolute in the bud; flowerstems somewhat 2-edged, leaves elliptical, oblong, with pellucid dots. It is an introduced weed, hard to eradicate where it is allowed to establish itself. Fl. June–July, when it should be collected for use.

CARYOPHYLLACEÆ. (Pink Family.)

Saponaria officinalis, L. Soapwort. Bouncing Bet. An herbaceous plant belonging to the pink family, bearing rose-colored flowers on stout stems. Leaves opposite, entire, oval-lanceolate. Calyx oblong-cylindrical 5-toothed; petals 5. Adventitious from Europe, but now widely spreading, especially around habitations. July–September. The leaves, when bruised in water, may be worked into a lather. Collect the leaves and the root.

Stellaria media, Smith. Chickweed. Low, spreading annual, troublesome weed with small white star-shaped flowers, which appear, even in midwinter, during a few warm days. Petals shorter than the calyx, 2-parted; stamens 3–10. It is characterized by a line of hairs on one side of the stem, changing to the opposite side whenever it reaches a pair of leaves. The herb.

PORTULACACEÆ. (Purslane Family.)

Portulaca oleracea, L. (Common Purslane.) It is a prostrate annual, seldom more than 6′ high, glabrous, with small ob-

long wedge-shaped leaves, and small stalkless clusters, or solitary small yellow flowers, above the last leaves on the branches. It is much esteemed in France as a potherb, where three varieties are cultivated. It possesses antiscorbutic properties. With us it is only known as a hog-mast. Flowers throughout summer; native of the Old World.

MALVACEÆ. (Mallow Family.)

Malva rotundifolia, L. Mallow. Annual, with tough downy stems lying upon the ground, has roundish-lobed leaves and small pale-bluish flowers clustered in their axils. Calyx with a 3-leaved involucel at the base, like an outer calyx. Petals obcordate. Styles numerous, stigmatic down the inner side; column of stamens anther-bearing at the top. Waysides and cultivated grounds, naturalized, from Europe. Fl. May–June. The herb and flowers.

Gossypium herbaceum. L. Cotton Plant. Indigenous to the Asiatic continent, cultivated in India, from the remotest periods of Hindu culture. Gossypium Barbadœnse and Peruvianum were woven into cloth at the time of the conquest. Both the long (sea-island) and short staple cotton (upland) are derived from G. Barbadœnse. Leaves alternate, heart-shaped, 3 or 5-lobed, with the lobes sharp or rounded. Flowers large and showy, growing singly upon stalks in the axils of the leaves. They have a cup-shaped, shortly 5-toothed calyx, surrounded by a larger outer calyx or involucel of three broad, deeply cut segments, joined together, and heart-shaped at the base; a corolla of 5 petals; many stamens, united into a central column; and a 3 or 5-celled ovary. The fruit is a 3 or 5-celled capsule, which bursts open through the middle of each cell when ripe, exposing the numerous seeds, covered with cellular filaments, known under the name of cotton. The seeds themselves contain a considerable quantity of oil, which, together with the cake, formed by pressing, are also important articles of commerce. The bark of the root is used medicinally.

TILIACEÆ. (Linden Family.)

Tilia pubescens, Ait. Linden or Basswood, also Lime tree or White-wood. A stately tree with soft and white wood, very fibrous and tough inner bark, heart-shaped serrate leaves, 2–3′ long, pubescent beneath, and rather thin of texture. Sepals and petals 5, stamens numerous, filaments cohering in 5 clusters, with petal-like scales amongst the stamens. Flowers in small cymes, hanging on an axillary peduncle, which is united to a ligulate membranaceous bract. Flowers cream color, honey-bearing, fragrant. Fruit dry and woody, indehiscent, globular, becoming 1-celled and 1–2 seeded. Fl. May–June. East Tennessee, in and near the mountains. The bark is used officinally.

Tilia heterophylla, Vent. White Basswood. Differs from the former in the larger size of the leaves which are also of a firmer texture, smooth and bright green above, and silvery-whitened with a fine down underneath. Most frequent along the water-courses of Middle Tennessee. Fl. May-June. The bark can be used for the same purposes as the former.

Tilia Europæa, L. Which is frequently planted, is very delicately fragrant and abounds still more in flowers than the native species, from which it is distinguished by the abscence of petal-like scales among the stamens. The odor of the flowers is due to a volatile ethereal oil, which soon dissipates, but the bracts on the peduncles are impregnated with a persistent fragrant resin, which remains fixed for a long time. The flowers with the bracts are an excellent diaphoretic remedy, given in infusion as a tea, and produce diaphoresis without vascular excitement. The addition of some lemon-juice makes the tea pleasant tasting and increases its action.

GERANIACEÆ. (Geranium Family.)

Geranium maculatum, L. (Wild Crane's bill.) Low herb with perennial rootstock. Ten stamens, ovary of 5 one-seeded carpels, separating elastically with their long styles when mature, 5 petals, light purple, bearded on the claw, $\frac{1}{2}$′ long;

stems erect, hairy; leaves about 5-parted, the wedge-shaped divisions lobed and cut at the end. Leaves somewhat white-blotched, when matured. May–June. Rich woodlands, common. Rhizome, collected in autumn.

Oxalis Acetosella, L. COMMON WOODSORREL. Small, delicate perennial, with sour watery juice, stemless; leaves and sepals arising from a creeping and scaly-toothed rhizome. Leaves 3-foliolate, leaflets obcordate, closing and drooping at night-fall; scape 1-flowered, 2–5′ high. Sepals 5, persistent; petals 5, white, with reddish veins, often notched. Stamens 10; styles 5. Pod oblong, membranaceous, 5-celled, more or less 5-lobed, each cell opening on the back; valves persistent, being fixed to the axis by the partitions. In our State only on the summit of the Smoky Mountains. The herb in flower.

Impatiens pallida, Nutt. JEWEL WEED. FALSE TOUCH-ME-NOT. Glabrous annual herb, with thick succulent stems, enlarged at the joints, where the alternate undivided leaves are given off. Calyx and corolla colored alike and not clearly distinguishable. Sepals apparently 4; the anterior one notched at the apex, probably consisting of two combined; the posterior one largest, and forming a spurred sac. Petals 2, unequally sided and 2-lobed; stamens 5; ovary 5-celled. Pod elastically dehiscent. Flowers pale-yellow, sparingly dotted with brownish-red. Shady, moist places, very common. Fl. July–September. The leaves.

RUTACEÆ. (RUE FAMILY.)

Xanthoxylum Americanum, Mill. PRICKLY ASH. Shrub, with yellowish green flowers, appearing before the leaves. Flowers dicœcious; calyx none; petals 4–5; pistils 3–5, with slender styles. Pods thick and fleshy, 2-valved, 1–2 seeded. Leaves pinnate, of 2–4 pairs of leaflets and one odd one, downy when young. Bark, leaves and pods very pungent and aromatic. The stems, and often the leafstalks, prickly. Fl. April–May. Bark and berries officinal. Frequent in the limestone regions.

Ptelea trifoliata, L. HOP-TREE. SHRUBBY TREFOIL. Medium size or sometimes tall shrub with 3-foliolate leaves and greenish white small flowers, in compound terminal cymes, leaflets ovate, pointed, downy when young. The polygamous flowers have a 4–5 parted calyx, 4–5 petals, and in the male flowers as many stamens; in the female flowers the 2 or 3-celled ovary is placed on a short stalk. The fruit is turgid in the center, and surrounded by a broad membranaceous wing, like that of an elm. The fruits are bitter and aromatic, and have been used as a substitute for hops. Common in calcareous soils in oak and cedar barrens. Fl. May–June. The bark.

SIMARUBACEÆ. (SIMARUBA FAMILY.)

Ailanthus glandulosa, Desf. TREE OF HEAVEN. Imported from China and planted as a shade-tree, but now largely spreading over the whole country. It is a handsome tree and makes a rapid growth. Its foliage is not attacked by insects, but serves as food for a species of silk-worm. It is dicœcious. The pollen and flowerbuds of the male tree diffuse a penetrating unpleasant odor, and therefore should not be planted near dwellings. The female tree is not guilty of such bad demeanor, and its large clusters of seeds, resembling the fruit of the hop-tree and produced in abundance, make it look very attractive in late summer and autumn. The leaves are very long, pinnate, with many leaflets. The bark is used and called Chinese Sumach Bark.

MELIACEÆ. (MELIA FAMILY.)

Melia Azedarach, L. PRIDE OF INDIA. CHINABERRY TREE. Carried from India to America, and thriving well in the Southern States. It is from 20–50° high, with 2-pinnate leaves, and large bunches of lilac flowers emitting an agreeable perfume. The bark of the root is used as an anthelmintic.

ILICINEÆ. (HOLLY FAMILY.)

Ilex opaca, Ait. AMERICAN HOLLY. Tree 15–50° high, of

charming aspect in winter, when the open sprays, with their evergreen foliage, are covered with shining coral-red berries. Leaves oval, flat, the wavy margins with scattered spiny teeth; flowers in loose clusters along the base of the young branches and in the axils, more or less dicœciously polygamous. Parts of flowers in fours; filaments 4–6, the berry-like drupe containing 4–6 nutlets. Frequent, but small in the mountains, and 50° high and trunk 18′ diam. in river bottoms. Fl. June. Collect the leaves. Homeopathic Pharmacopœia.

Ilex verticillata, Gray. (Black Alder. Winterberry.) Small tree with deciduous leaves which are obovate, pointed, serrate, downy on the veins beneath; flowers in sessile clusters, or the fertile solitary, all very short peduncled, fruit bright red. Parts of flowers in fives or sixes. Nutlets of the berries smooth. May–June. The bark, collected in fall. Very frequent in the swampy regions of West Tennessee.

CELASTRINEÆ. (Staff-tree Family.)

Celastrus scandens, L. Staff-tree. Climbing Bitter-sweet. Wax-work. Climbing shrub; leaves ovate-oblong, finely serrate, pointed. Flowers polygamo-dicœcious. Petals and stamens 5, inserted on the margin of a cup-shaped disk, which lines the base of the calyx. Flowers small, greenish, in raceme-like clusters. The opening orange-colored pods, displaying the scarlet covering of the seeds, are very ornamental. Grows very abundant and luxuriantly along ponds and streams in West Tennessee. Fl. June. The bark of the root.

Euonymus atropurpureus, Jacq. Burning-bush. Waahoo. Upright shrub, 6–12° high; leaves petioled, oval-oblong, pointed; parts of the dark-purple flower in fours; pods smooth, deeply lobed. Ornamental in autumn by its copious crimson fruit, drooping on long peduncles. Rich limestone soils over the whole State. Bark of the root.

RHAMNACEÆ. (Buckthorn Family.)

Ceanothus Americanus, L. Red-root. New Jersey Tea. Shrubby plant, with stems 1–3° high from a dark-red root. Flowers in little umbell-like clusters, forming dense panicles at the summit of naked flower-branches. Calyx and pedicels colored like the petals. Calyx 5-lobed; petals hooded. Fruit 3-lobed, dry, splitting into three carpels when ripe. Dry woodlands, in siliceous soils, very abundant. Fl. May–June. The root, collected in autumn.

VITACEÆ. (Vine Family.)

Ampelopsis quinquefolia, Michx. (**Vitis quinquefolia**, Lam.) Virginian Creeper. A common woody vine in rich ground, climbing high and extensively, attaching itself to the bark of trees by rootlets as well as disk-bearing tendrils. Flowers resembling those of the grape; leaves digitate, with 3–7 oblong-lanceolate, sparingly serrate leaves. Fl. July, ripening the small blackish berries in October. Young branches and the bark. Resembling the poison-oak, whose leaves are 3-foliate, rhombic-ovate.

SAPINDACEÆ. (Soapberry Family.)

Negundo aceroides, Mœnch. Box Elder. Ash-leaved Maple. Large, irregular branching tree, on wet lands. Flowers dicœcious. Calyx minute, 4–5 cleft. Petals none. Sterile flowers in clusters, on capillary pedicels, the fertile in drooping racemes. Leaves pinnate, with 3–5 leaflets. Fl. March–April. The bark.

Aesculus glabra, Willd. Ohio Buckeye. Large tree with opsite digitate leaves; leaflets serrate, straight-veined. Flowers in a terminal thyrsus or dense panicle, most of them with imperfect pistils and sterile; pedicels jointed. Stamens curved, longer than the pale yellow corolla of 4 upright petals. Fruit covered with prickles when young. Flowers small, not showy. The bark, which exhales an unpleasant odor, is collected in late season. Fl. in May and is very

abundant, especially in the limestone regions of Middle Tennessee.

ANACARDIACEÆ. (Cashew Family.)

Rhus glabra, L. Smooth Sumach. Shrub 6–18° high, with odd-pinnate leaves; leaflets 11–31, whitened beneath, lanceolate-oblong, pointed, serrate. The whole plant smooth and glaucous. Flowers in a terminal thyrsoid panicle; fruit globular, clothed with acid crimson hairs. Light, sandy soils, very frequent. Not poisonous. Ripe fruit collected in October.

Rhus venenata, DC. Poison Sumach. Shrub or small tree 6–18° high, with smooth odd-pinnate leaves, and polygamous flowers in loose and slender axillary panicles; leaflets 7–13, obovate oblong, entire. Fruit globular, glabrous, whitish or dun-colored; the stone striate. The most poisonous species; also called Poison Elder. In swamps and bogs, in the Cumberland Mountains. Frequent around Sewanee. Homeopathic Pharmacopœia. The leaves.

Rhus Toxicodendron, L. Poison Ivy. Climbing by rootlets and sometimes low and erect. High climbing plants having usually more entire leaves. (Rhus radicans, L.) Flowers in loose and slender axillary panicles; fruit globular, glabrous, whitish or dun-colored; the stone striate. Leaflets 3, rhombic-ovate, mostly pointed and rather downy beneath, variously notched, sinuate or cut-lobed. Very common. Fl. June. The leaves, collected during flowering season.

Rhus Canadensis, Marsh. **Rhus aromatica**, Ait. Fragrant Sumach. Shrub 3–7° high, the leaves not unpleasantly smelling; soft pubescent when young, becoming glabrate; leaves 3-foliate; leaflets rhombic-obovate, unequally cut-toothed, 1–3′ long, the terminal one cuneate at base and sometimes 3 cleft. Flowers pale-yellow, developing in spring, long before the leaves. Rocky ground in the limestone region, especially in the cedar-barrens of Middle Tennessee. Fl. May. Collect the bark of the root.

POLYGALACEÆ. (Milkwort Family.)

Polygala Senega, L. Seneca Snakeroot. Low herb with simple entire leaves and no stipules, with flowers in a solitary close spike on simple stems, 6–12′ high, springing from thick and hard, knotty rootstocks. Flowers irregular. Calyx 5-sepalous, persistent, the 3 upper sepals small, the 2 lateral much larger. Petals 3, hypogynous. Fruit a small 2-seeded pod. Seeds with a caruncle nearly as long as the seed. Fl. May–June. Frequent in East Tennessee.

Polygala Senega, L. Var. latifolia. Torr. & Gray. Is a stouter variety, prevailing in Middle Tennessee. The root, collected in summer.

LEGUMINOSÆ. (Pulse Family.)

Trifolium pratense, L. Red Clover. The common clover of our fields, with sessile purple flowers in ovate heads, sweet-scented. It is a short-lived perennial.

Trifolium repens, L. White or Dutch Clover. A smooth perennial; the slender stems spreading and creeping; flowers shortly pedicelled in umbel-like, round heads, the short pedicels reflexed when old; corolla white or rose-color. It is by some held to be the Shamrock of the Irish legend, but from ancient pictures and carvings, St. Patrick's plant was of upright growth and responds to Oxalis acetosella. The flower-heads of both species are used for extracts.

Melilotus officinalis, Willd. Yellow Melilot. Sweet Clover. Biennial herb, fragrant in drying, upright; 2–4° high; leaves pinnately 3-foliolate, leaflets obovate oblong, obtuse. Flowers much as in Trifolium, corolla yellow, deciduous, free from the stamen-tube, the petals nearly of equal length. Pod ovoid, coriaceous, wrinkled, longer than the calyx, scarcely dehiscent, 1–2-seeded. Waste ground. Introduced, but in places frequently met in great numbers. The herb is officinal.

Psoralea melilotoides, Michx. Psoralea. Perennial herb,

erect 1–2° high, somewhat pubescent. Leaves pinnately 3-foliolate; leaflets lanceolate or narrowly oblong. Flowers spiked; spikes oblong, long-peduncled. Corolla truly papilionaceous; stipules awl-shaped; bracts ovate or lanceolate, taper-pointed; pods strongly wrinkled transversely. Fl. July-August. The root is used in domestic practice.

Robinia Pseudacacia, L. Black Locust. Large tree 50–80° high, branches not prickly. Leaves odd-pinnate, the ovate leaflets stipellate. Flowers showy, in hanging axillary racemes, white, fragrant, pod smooth. A valuable timber-tree. The bark.

Gleditchia triacanthos, L. Honey Locust. Thorny tree with large and spreading thorns. The thorns are stout, often triple or compound. Leaves once or twice pinnate, leaflets lanceolate oblong, somewhat serrate; pods elongated 1–1½° long, often twisted, filled with sweet pulp between the seeds. Flowers inconspicuous, greenish in small spikes. June. The foliage, collected early.

Tephrosia Virginiana, Pers. Goat's Rue. Catgut. Hoary perennial herbs, with odd-pinnate leaves. Silky-villous with whitish hairs when young; stem erect and simple, 1–2° high, leafy to the top. Leaflets 17–29, linear-oblong; flowers large and numerous, clustered in a terminal oblong dense raceme or panicle, yellowish-white, marked with purple. Dry, silicious soils, in magnesian limestone region or so-called gravelly-hill lands, where the blackjack oak and chestnuts constitute the timber growth, in inexhaustible quantities. Fl. June–July. Root collected in fall.

Stylosanthes elatior, Swartz. Pencil Flower. Low perennials, branched from the base, with wiry stems, pinnately 3-foliolate leaves, the sheathing stipules united to the petioles, no stipels, and small yellow flowers in terminal heads or short spikes. The leaflets are lanceolate and straight-veined. Calyx early deciduous; tube slender and stalk-like; limb unequally 4–5 cleft, the lower lobe more distinct. Pod 1–2 jointed, small and short, reticulated. In dry barrens as frequent as the for-

mer. Fl. June–September. The herb, collected in flowering season.

Cercis Canadensis, L. RED-BUD. JUDAS-TREE. A small, ornamental tree with rounded heart-shaped simple leaves, caducous stipules, and red-purple flowers in umbel-like clusters along the branches of the last or preceding years, appearing before the leaves. Corolla imperfect papilionaceous; standard smaller than the wings; keel-petals larger and not united. Pod oblong, flat, many-seeded, the upper suture with a winged margin. Earliest of our flowering trees. Rich soils, everywhere. Fl. in February–March. The bark, collected in fall.

Cassia Marilandica, L. AMERICAN SENNA. Stout herbs 3–4° high, from perennial rootstocks. Leaves abruptly pinnate, leaflets 6–9 pairs lanceolate-oblong, obtuse; petiole with a club-shaped gland near the base; stipules deciduous. Flowers in short axillary racemes, the upper ones panicled. Sepals 5, scarcely united at base. Petals 5, unequal, spreading, yellow. Pods linear, slightly curved, flat; whole plant glabrous. In open grounds, alluvial soils, abundantly. July-August. Leaflets, collected after flowering.

Gymnocladus Canadensis, Lam. A large, tall tree with rough bark, stout branchlets, and large unequally twice-pinnate leaves, which are 2–3° long, with several large partial leafstalks bearing 7–13 ovate, stalked leaflets, the leaflets standing vertical, the lowest pair of leaves with single leaflets; stipules wanting. Flowers dicœcious or polygamous, regular. Calyx elongated-tubular below, 5-cleft. Petals 5, oblong, equal, inserted on the summit of the calyx tube. Stamens 10, distinct, short, inserted with the petals. Pod 6–10′ long, 2′ broad, the seeds over ½′ across. Woods with rich soil, scatteringly but generally distributed over the State. The leaves and seeds are used in homeopathic practice.

Baptisia tinctoria, R. Br. WILD INDIGO. Perennial herb, 2–3° high, smooth and slender, rather glaucous, with spreading branches, palmately 3-foliolate, almost sessile leaves.

Leaflets rounded wedge-obovate ½–1½′ long; stipules and bracts minute and deciduous. Flowers yellow with 4–5 toothed calyx. Standard no longer than the wings; keel-petals nearly separate, and like the wings, straight. Pod stalked in the persistent calyx, on a stalk longer than the calyx. Plant turning black in drying. July. Very copiously throughout the Cumberland and Alleghany Mountains. The root.

ROSACEÆ. (Rose Family.)

Prunus Virginiana, L. Choke-Cherry. A tall shrub, with grayish bark; leaves oval, oblong or obovate, abruptly panicled, very sharply serrate with slender teeth; flowers in racemes terminating leafy branches; petals roundish, fruit red. Fl. May. East Tennessee. The bark.

Prunus serotina, Ehrh. Wild Black Cherry. A large tree, with reddish brown branches, leaves taper-pointed with incurved short and callous teeth, thickish, shining above; racemes elongated, petals obovate; fruit purplish-black. Frequent, over the State. The bark, collected in October.

Gillenia trifoliata, Mœnch. Indian Physic. Bowman's Root. Perennial herbaceous plant, with nearly sessile 3-foliolate leaves; leaflets ovate oblong, pointed, cut-serrate; stipules small, awl-shaped, entire. Calyx narrow, 5-toothed; teeth erect. Petals 5, unequal linear-lanceolate, inserted in the throat of the calyx, convolute in the bud. Stamens 10–20 included. Pods 5, included, at first slightly cohering with each other, 2–4 seeded. Fl. July. Eastern part of the State, frequent.

Gillenia stipulacea, Nutt. American Ipecac. Differs from the former by deeply incised leaflets and large, leaf-like, doubly incised stipules. July. Of both the rootstock is collected in fall.

Agrimonia Eupatoria, L. Agrimony. A common way-side plant, frequently abundant in new clearings, has interruptedly pinnate leaves, a scarcely branched stem 1–2° high, and an

elongated spike of starry yellow flowers. Calyx-tube top-shaped, contracted at the throat, beset with hooked bristles above, indurated and inverted in fruit. Petals 5, stamens 5–15. Fl. June; collected while blooming.

Rubus villosus, Ait. COMMON OR HIGH BLACKBERRY. Shrubby, 1–6° high, stems furrowed, upright or reclining, armed with stout, curved prickles; branchlets, stalks and lower surface of the leaves hairy and glandular; leaflets 3 or pedately 5, ovate, pointed, unequally serrate, the terminal ones somewhat heart-shaped, conspicuously stalked. Flowers racemed, numerous. Berries black. Waste grounds.

Rubus trivialis, Michx. LOW BUSH-BLACKBERRY. Frequents poor, low, gravelly hills. It is shrubby, procumbent, bristly and prickly; leaves evergreen, coriaceous, nearly glabrous; leaflets 3 or pedately 5, ovate oblong, sharply serrate. Peduncles 1–3 flowered, petals large. The bark of the roots of either is collected.

Potentilla Canadensis, L. CINQUEFOIL. Low, herbaceous plant, the slender stems prostrate, and running, and widely spreading; 5-petaled, yellow flowers on solitary axillary peduncles. Achenes many, collected in a head on the dry, hairy receptacle. Leaves ternate, but apparently pinnate by the parting of the lateral leaflets. Leaflets cuneate-oblong, incisely serrate. Covering old fields and sterile lands. The herb, collected in flower.

Spiræa tomentosa, L. HARDHACK. STEEPLE-BUSH. Erect shrub with simple leaves. Stems and lower surface of the ovate or oblong serrate leaves very woolly; stipules obsolete. Calyx 5 cleft, persistent; petals 5 obovate; flowers in short racemes, crowded in a dense panicle, rose color; pods woolly. A pretty plant, suitable for cultivation in the flower-garden. Hilly country on the borders of Kentucky. The leaves, collected in summer.

Pyrus Americana, DC. AMERICAN MOUNTAIN ASH. A medium size tree confined to the higher ridges and mountain-tops of East Tennessee. The leaves are odd-pinnate, with rather

numerous leaflets (13–15) which are lanceolate, taper-pointed and sharply serrate. Calyx tube urn-shaped, petals roundish. Cymes compound; pome berry-like, size of peas. Fl. June. The bark.

CALYCANTHACEÆ. (Calycanthus Family.)

Calycanthus floridus, L. Carolina Allspice. Shrub with opposite oval leaves, downy underneath. Calyx of many sepals, united below into a fleshy inversely conical cup; the lobes lanceolate, mostly colored like the petals, which are similar, in many rows, thickish, inserted on the top of the closed calyx-tube. The lurid purple flowers terminating the leafy branches. Bark and foliage aromatic. The crushed flowers exhaling the odor of strawberries. Apparently rare and only found in few localities. It is frequently cultivated in gardens. C. lævigatus and glaucus occur in the Cumberland Mountains and Alleghanies.

Calycanthus glaucus, Willd. Similar to the foregoing but in every way larger and stouter; leaves oblong-ovate or ovate-lanceolate, conspicuously taper-pointed, glaucous-white beneath, roughish above, glabrous, large, 4–7′ long. Frequent in the Cumberland Mountains about Whiteside, and still more so in the Smoky Mountains—Tuckaleechee Cove. Fl. June. The bark. This species is preferred for medicinal preparations in the latest U. S. Dispensatory.

SAXIFRAGACEÆ. (Saxifrage Family.).

Heuchera Americana, L. Alum Root. Perennial, the roundish leaves with short roundish lobes, from the rootstock. Flower-stems from 1½–2° high, glandular and more or less hirsute, with short hairs. The lobes of the leaves rounded and with crenate teeth. Calyx bell-shaped, 5-cleft, stamens 5, styles 2, capsule one-celled. Rocky woodlands and river-banks. The root is collected in fall.

Hydrangea arborescens, L. Seven Bark. Shrub with opposite petioled leaves and numerous flowers in compound cymes.

Leaves ovate, in the var. cordata Torr. & Gray, heart-shaped. The marginal flowers are usually sterile and radiant, consisting merely of a showy membranaceous and colored flat and dilated calyx. Calyx-tube hemispherical, 8–10-ribbed, coherent with the ovary; the limb 4–5-toothed. Petals ovate, stamens 8–10. Capsule 15-ribbed, crowned with 2 diverging styles. Over the State in rocky lands and in ravines. The variety is very abundant in the mountain gorges of East Tennessee. The root, collected in summer.

CRASSULACEÆ. (Stone-crop Family.)

Penthorum sedoides, L. Virginia Stone-crop. A weed-like perennial, upright, with scattered leaves and yellowish-green flowers loosely spiked along the upper side of the naked branches of the cyme. Sepals 5. Petals rare, if any. Stamens 10. Pistils 5, united below, forming a 5-angled, 5-horned 5-celled capsule, which opens by the falling off of the beaks. In muddy, wet places, very common. Fl. May, herb collected in summer.

HAMAMELIDEÆ. (Witch-Hazel Family.)

Hamamelis Virginica, L. Witch-Hazel. Tall shrubs or sometimes trees, with straight-veined leaves and yellow, perfect or polygamous flowers, blooming in November or December, maturing seeds next summer. Calyx 4-parted with 2 or 3 bractlets at the base; petals 4, strap shaped, long and narrow, stamens 8, styles 2. Capsule opening loculicidally from the top, enclosing a single, large and bony seed. Along water courses and in wet lands. Collect the bark and leaves in early summer.

Liquidambar styraciflua, L. Sweetgum. A stately tree of very symmetric growth, loving damp, inundated lands or creek and river banks. Under such conditions it grows well in the poorest soils. It attains a height of 80–100°. Leaves rounded, deeply 5–7-lobed, smooth and shining, glandular serrate, the lobes pointed. The flowers are monœcious, surrounded by a four-leaved deciduous involucre; the male catkins

conical or subglobular with numerous anthers, the female subglobular, surrounded by scales. The fruit forms a sort of strobilus, filled with mostly abortive seeds, resembling sawdust. The gray bark beset with corky ridges on the branchlets. Distributed over the whole State. Fl. March. The bark, collected in fall or winter.

ONAGRACEÆ. (Evening-Primrose Family.)

Oenothera biennis, L. Evening Primrose. A stout, erect biennial, with a wand-like flower stem or leafy spike 1–5° high; leaves lanceolate to oblong, acute or acuminate, repandly denticulate, the lowest petioled; calyx-tube 1–2½′ long, the tips of the sepals contiguous; petals ½–¾′ long; capsule more or less pubescent or hirsute, flowers yellow. Dry, cultivated or fallow lands. A common weed. The leaves.

PASSIFLORACEÆ. (Passion-Flower Family.)

Passiflora incarnata, L. Passion Flower. Maypops. Climbing or trailing herbaceous perennial. A singular and beautiful plant, but also very troublesome weed from the difficulty of eradicating it, and the excessive prolificness of its spreading roots. Leaves 3–5 cleft, the lobes serrate. Tendrils emerge from the axils of the petioles. The flower is large, orbicular in outline, 2′ in diameter, consisting of a calyx of 5 sepals united at the base into a short cup, colored like the petals within; the throat crowned with a triple fringe. Petals 5 on the throat of the calyx, flesh-colored. Involucre 3-leaved. Fruit as large as a hen's egg, pulpy, pleasant tasting. It is at present highly recommended as a pure hypnotic without producing general narcosis. Should this property be confirmed by further observations, it would become one of the most important drugs. The herb is used for a fluid extract. (Eli Lily's Fluid Extracts.)

CACTACEÆ. (Cactus Family.)

Opuntia vulgaris, Mill. Fleshy and thickened, leafless plants,

jointed, prostrate and spreading; joints broadly obovate 2–4′ long; leaves minute 2–2½″ long, ovate-subulate, generally appressed; bristles short, greenish-yellow, rarely with a few small spines; flowers solitary, sessile, pale yellow about 2′ broad, with about 8 petals; fruit 1′ long. Only recently found near Nashville, where the closely related Opuntia Rafinesquii, *Engelm.*, is abundant. Used only in homeopathy.

UMBELLIFERÆ. (Parsley Family.)

Sanicula Marilandica, L. and

var. **Canadensis**, Torr. Sanicle. Black Snake-root. Perennial, rather tall glabrous herb with few palmately-lobed or parted leaves, those from the root long-petioled. Calyx-teeth persistent. Fruit globular, the carpels not separating spontaneously, ribless, thickly clothed with hooked prickles, each with 5 oil-tubes. In Marilandica the styles are longer than the prickles, in var. Canadensis the styles are shorter. Both varieties are common and abundant in moist woodlands everywhere. Fl. June. Root collected in fall or summer.

Eryngium yuccæfolium, Michx. Rattlesnake's Master. A stout perennial 2–3° high, with spiny leaves and hemispherical flower heads of sessile flowers, the base of which is surrounded with ovate-lanceolate, mostly entire cuspidate-tipped bracts, shorter than the head and similar bractlets. Plant stiff and rigid. Distributed over the State, growing in dry and damp soils. The very stout rhizome is collected in fall.

Daucus Carota, L. Carrot. Bristly biennial, with pinnately decompound leaves, foliacious and cleft involucral bracts, and white flowers in compound umbels, which become strongly concave. Fruit oblong flattened dorsally; carpel with 5 slender bristly primary ribs and 4 winged ones, each bearing a single row of barbed prickles. Naturalized from Europe, and becoming an undesirable nuisance. Horses and cattle don't touch it. The herb is officinal.

Heracleum lanatum, Michx. Cow Parsnip. The stoutest of our native umbellifers. Its proper habitat are the northern prairies, but it finds a congenial home on the mountain-tops of the Smoky Mountains and Blue Ridge, where it grows 8–10° high. It has large, ternately compound leaves, broad umbels, deciduous involucre, and many-leaved involucels, white flowers, and obcordate petals, the outer ones commonly larger and 2-cleft. The whole plant is woolly. The stout rhizome is collected.

Thaspium aureum, Nutt. Zizia aurea, Koch. Meadow-parsnip. Perennial, 2–5° high, glabrous; root-leaves mostly cordate, serrate; stem-leaves simply ternate (rarely bi-ternate); leaflets ovate to lanceolate, round or tapering at base, serrate; flowers deep yellow; fruit globose-ovoid, about 2″ long, all the ribs equally winged. Fl. June. Open woodlands and hillsides. Frequent in the limestone regions. The root is collected. On the homeopathical drug-list under the synonym Zizia aurea.

Cicuta maculata, L. Water Hemlock. Spotted Cowbane. Musquash Root. A smooth perennial, growing in swampy lands, copiously in West Tennessee, but also frequent in mountain bogs. It is a very poisonous plant, against whose violent narcotic effects we possess no satisfactory antidote. Stems stout, 2–5° high, streaked with purple; leaves 2–3 pinnate, the lower on long petioles; leaflets lanceolate to oblong-lanceolate 1–5′ long, acuminate, coarsely serrate, the veins passing to the notches; pedicels in the umbellets numerous, very unequal; fruit broadly ovate to oval, 1–1½″ long. Fl. August. Collect leaves in flowering season.

Osmorrhiza longistylis, DC. Sweet Cicely. Glabrous or slightly pubescent perennial, 1–3° high from a thick aromatic rootstock, with ternately compound leaves, ovate, variously-toothed leaflets, few-leaved involucres and involucels, and white flowers in few-rayed and few-fruited umbels. Rich woodlands; frequent in the vicinity of Nashville and through Middle Tennessee. Fl. May. Root collected in September.

Hydrocotyle ranunculoides, L. Low, smooth, marsh or aquatic perennial, with slender creeping or floating stems; leaves rather thick, round-reniform, 3–7-cleft, the lobes crenate. Calyx teeth obsolete. Fruit 1–1½″ broad, ribs rather obscure; peduncles 1–3′ long, reflexed in fruit; capitate umbel 5–10-flowered. Prefers shallow streams of running water. Being an unsightly object it is easily overlooked. Vicinity of Nashville, Tullahoma creek, etc. In homeopathic practice.

ARALIACEÆ. (Ginseng Family.)

Aralia spinosa, L. Angelica-tree. Hercules' Club. Dwarf Elder. A shrub or slender, low tree; the stout stems or stalks prickly; leaves very large, decompound; leaflets ovate, pointed, serrate, pale beneath. Flowers in numerous umbels, united to a large, compound panicle. Ovary 2–5-celled, ripening into a berry-like drupe with as many seeds as cells. Common over the entire State, but most frequent in the cedar-glades of Middle Tennessee. Fl. June–July. The bark is collected.

ARALIACEÆ. (Ginseng Family.)

Aralia racemosa, L. Spikenard. Herbaceous; stem widely branched; leaves large, decompound; leaflets heart-ovate, pointed, doubly serrate, slightly downy; umbels racemous. The large roots spicy-aromatic tasting. Highlands of Middle Tennessee, Cumberland Mountains. Abundant twelve miles from Nashville, on the Charlotte pike. The rhizome, collected in autumn.

Aralia hispida, Vent. Bristly Sarsaparilla. Wild Elder. Stem 1–2° high, bristly, leafy, terminating in a peduncle bearing 2–7 corymbed umbels; leaves twice pinnate; leaflets oblong-ovate, acute, cut-serrate. Higher mountains of East Tennessee. Abundant in the Frog Mountains, Polk County. Fl. June. Rhizome, collected in fall.

Aralia nudicaulis, L. Wild Sarsaparilla. Stem scarcely

rising out of the ground, smooth, bearing a single long-stalked leaf 1° high, and a shorter naked scape with 2–7 umbels; leaflets oblong-ovate or oval, pointed, serrate, 5 on each of the three divisions. Throughout the Cumberland Mountains, Sewanee. Fl. July. The rhizome.

Aralia quinquefolia, Decaisne & Planchon. GINSENG. Stems herbaceous, low, simple, bearing a whorl of 3 palmately 3–7-foliolated leaves and a simple umbel on a slender peduncle. Root large, spindle-shaped, often forked. Fruit bright red. Rich woodlands and hillsides. Occurs close to the city of Nashville on the neighboring hills. It is getting scarce, as it was hunted up by the "sang-gatherers" for many years, for export to China. It has no market at home (except in homeopathy), verifying the adage that "The prophet is not without honor save in his own country." Root, collected in fall.

CORNACEÆ. (DOGWOOD FAMILY.)

Cornus florida, L. DOGWOOD. Tree, 12–40° high; leaves ovate, pointed, acutish at the base. Flowers greenish, in a cluster, surrounded by a large and showy 4-leaved corolla-like, white (or very rarely purplish) involucre. Fruit oval, bright red. One of the harbingers of spring; found everywhere. Bark of the wood, collected in fall.

Cornus sericea, L. KINNIKINNICK. Shrub 6–10° high; branches purplish; the branchlets, stalks and lower surface of the narrowly ovate or elliptical pointed leaves, rough with a harsh pubescence above, and downy beneath. Leaves opposite. Flowers white, in open flat cymes. Fruit white. Limestone regions. Very frequent on the cliffs and rocky banks of the Cumberland river. Fl. June. The bark.

CAPRIFOLIACEÆ. (HONEYSUCKLE FAMILY.)

Sambucus Canadensis, L. ELDER. A shrub, with the stems scarcely wooded, 5–10° high, pinnate leaves, leaflets 5–11°, oblong, smooth, the lower often 3-parted, emitting a rank smell when bruised. Flowers white, numerous, small, col-

lected in compound cymes. Fruit a black-purple berry. Rich soil, in open ground. The flowers and the bark are used.

Viburnum prunifolium, L. Black Haw. A small tree, flowering early, with nearly evergreen shining leaves, which are oval, obtuse or slightly pointed, finely and sharply serrate. Flowers white, in compound, sessile cymes, 3–5 rayed. Fruit black, oval ½′ long, edible. This is a very ornamental plant and deserves cultivation. The bark, collected in fall.

Triosteum perfoliatum, L. Horse Gentian. Fever-wort. A shrub-like, perennial herb, softly hairy, leafy to the top, 2–4° high. Leaves oval, abruptly narrowed below, connate round the stem, downy beneath. Flowers sessile, clustered in the axils, brownish purple. Calyx-lobes linear-lanceolate, leaflike, persistent. Corolla tubular, gibbous at base, somewhat equally 5-lobed, scarcely longer than the calyx. Fruit orange-color, ½′ long. Copiously growing in the limestone belt, around the foot of the Cumberland Mountains. Cowan, Winchester. Fl. May. The root is collected.

Triosteum angustifolium, L. Very similar to the foregoing, is smaller, bristly-hairy and the leaves lanceolate. It serves the same purpose as the former. It occurs on the slopes and at the foot of the Chilhowee and Smoky Mountains.

Diervilla trifida, Mœnch. Low, upright shrub, with ovate or oblong, pointed, petioled, serrate leaves. Peduncles cymosely 3-several flowered, from the upper axils or terminal. Calyx-tube tapering at the summit; the lobes slender, awl-shaped, persistent. Corolla funnel-form 5-lobed, almost regular. Stamens 5. Pod long-beaked, 2-celled, 2-valved, many-seeded. Flower honey-color. Fl. June-August. On some drug lists. Bark and root.

RUBIACEÆ. (Madder Family.)

Cephalanthus occidentalis, L. Button-bush. A name expressive of the aggregation of the flowers into heads. A bushy shrub

with leaves opposite or sometimes three in a whorl, and yellowish-white flowers in round heads of the size of a marble. The calyx is tubular with an angular, 4-toothed limb; the stamens 4 in number, scarcely protruding from the corolla; the style protruded for a considerable distance from the throat of the corolla, and the stigma capitate. The fruit is inversely pyramidal in shape, crowned by the limb of the calyx, 2–4 celled, each cell or compartment containing one seed, or sometimes two of the seeds are wanting. The seeds are terminated by a small, thickened knob at one end. Fl. July–August. Found in all wet lands and along streams. The bark is used.

Mitchella repens, L. PARTRIDGE-BERRY. A smooth and trailing small evergreen herb, with round ovate and shining petioled leaves, minute stipules, white fragrant flowers often tinged with purple, and scarlet edible but tasteless berries, which remain over winter. Flowers in pairs, with their ovaries united. Calyx 4-toothed, corolla funnel-form, 4-lobed, the lobes spreading, densely bearded inside, valvate in the bud; stamens 4, style 1; stigmas 4, linear. Fruit a berry-like double drupe, crowned with the calyx-teeth of the two flowers, with 4 small, seed-like bony nutlets to each flower. In all dry woods, creeping about the foot of trees, especially beeches and coniferæ. The herb is collected at any time.

Galium Aparine, L. CLEAVES. GOOSE-GRASS. It derives its English name from the avidity with which the young stems and leaves are eaten by the geese; it is called cleaves on account of the tenacity with which the fruit adheres to any rough and soft substance. It is a long, straggling annual plant, abundant in hedges and among bushes through which it climbs, supporting itself by the hooked prickles, with which it is copiously invested. Leaves about 8 in a whorl, stems bristle-prickly backward, hairy at the joints; leaves lanceolate, tapering to the base, short pointed, rough at the margins and midrib, 1–2′ long; flowers white; fruit dry, bristly with hooked prickles. Shaded grounds, everywhere. The herb

COMPOSITÆ. (Composite Family.)

Elephantopus tomentosus, L. Elephant's-foot. A perennial rather homely plant, basal leaves obovate or narrowly spatulate, silky and prominently veined beneath ; stems scape-like, with a few bract-like leaves or naked. Heads discoid, 2–5 flowered, several together clustered into a compound pedunculated head; flowers perfect. Involucre narrow, flattened, of 8 oblong dry scales. Achenes 10 ribbed; pappus of stout bristles, chaffy-dilated at the base. Cumberland Mountains and East Tennessee. The following species is very much like it and answers the same purpose.

Elephantopus Carolinianus, Willd. It has a leafy stem, the upper leaves very like the basal. It is slightly hairy, rather smooth looking. Leaves obovate, thin. Over all dry hills and ridges of Middle Tennessee. Fl. June–August. Collect the leaves and flower-tops before they are in full bloom. A fluid extract is prepared from it. (Eli Lilly & Co.)

Vernonia fasciculata, Mich. Iron-weed. Upright, robust perennial herb from a matted rootstock, with leafy stems with alternate, oblong-lanceolate, rigidly serrate leaves. Flowers in corymbose cymes, heads discoid, 15-many-flowered; flowers perfect. Involucre shorter than the flowers, of many, much imbricated scales. Receptacle naked. Achenes cylindrical, ribbed; pappus double, the outer of minute, scale-like bristles, the inner of copious capillary bristles. Abundant everywhere in rich, uncultivated soils. Fl. July–August. The root is collected.

Eupatorium perfoliatum, L. Thoroughwort. Boneset. Stem stout, 4–6° high, hairy; leaves opposite, clasping at the base, tapering to a slender point, serrate, very wiry, wrinkled, downy beneath, 5–8″ long. Heads 10–15, sometimes 30-flowered; corolla 5-toothed, achenes 5-angled ; pappus a single row of slender capillary roughish bristles, flowers white; corymbs very compound and large. Low grounds, abounding. The leaves and flower-tops are collected in June–July.

Eupatorium aromaticum, L. White Snakeroot. Lower and

more slender than the former. "Aromaticum" is a misnomer, for it is not scented. Head 8–30 flowered; involucral scales nearly equal, in one row; leaves opposite, ovate, on short petioles, rather obtusely-toothed, not pointed, tickish. Stems nearly simple, flowers white. The oak-barrens of Middle Tennessee are literally "full of it." The roots, collected in autumn.

Eupatorium purpureum, L. JOE–PYE WEED. GRAVELROOT. Generally very tall; stems 6–12° high, stout and simple; leaves 3–6 in a whorl, oblong ovate or lanceolate, pointed, very veiny, roughish, toothed; corymbs very dense and compound. Heads cylindrical, 5–15 flowered; the purplish scales numerous, closely imbricated in several rows, of unequal length, slightly striate. Receptacle flat, flowers purple. Low, damp ground, flowering late in July and August. Abundant everywhere. The leaves and flowering tops are used.

Eupatorium ageratoides, L. WHITE SNAKE-ROOT. A handsome white-flowered species, available as a decorative plant in gardens and conservatories. Smooth, branching 3–4° high; leaves opposite, broadly ovate, long petioled, triple-nerved, pointed, coarsely and sharply toothed. Corymbs compound; heads 8–30 flowered; involucral scales nearly equal, in one row. Rich, moist soil, always in great numbers wherever it occurs. Fl. September. The root is collected.

Liatris squarrosa, Willd. BLAZING-STAR. Perennial herb with simple stems from a roundish corm or tuber, often hairy, 6′–2° high; leaves rigid, linear, elongated; heads usually few, 1′ long; scales mostly with elongated and leaf-like, spreading tips. Pappus very plumose, corolla-lobes hairy within. The handsome rose-purple flowers spicate or racemed. Highlands of Middle Tennessee. In great numbers at Greenbrier and Paradise Ridge, Davidson and Robertson Counties. The rootstock of this and the following.

Liatris scariosa, Willd. RATTLESNAKE MASTER. Stouter than the former, stems 2–5° high, pubescent or hoary; leaves

(smooth, rough, or pubescent) lanceolate, the lowest oblong-lanceolate or obovate-oblong, tapering into a petiole; heads few or many, large, 25–40 flowered; scales of the broad or depressed involucre obovate or spatulate, very numerous, with dry and scarious, often colored tips or margins. All along the Cumberland Mountain plateau, Lookout Mountain; very plentiful.

Liatris spicata, Willd. COLIC-ROOT. Smooth or somewhat hairy; stems very leafy, stout, 2–5° high; leaves linear, the lower 3–5 nerved; heads 8–12-flowered $\frac{1}{3}$–$\frac{1}{2}'$ long, crowded in a long spike; scales of the cylindrical, bell-shaped involucre oblong or oval, obtuse, appressed, with slight margins, achenes pubescent or smoothish. Oak barrens of Middle Tennessee; Lebanon, Tullahoma.

Liatris graminifolia, Willd. FINE-LEAVED BLAZING STAR. Hairy or smoothish; stem 1–3° high, slender, leafy. Leaves linear, elongated, one-nerved; heads several or numerous in a spike or raceme, 7–12 flowered; scales of the obconical or obovoid involucre spatulate or oblong, obtuse, or somewhat pointed, rigid, appressed; achenes hairy. Inflorescence sometimes panicled. The open oak barrens from Tullahoma to Cowan are thickly beset with this species. It flowers in July.

Grindelia lanceolate, Nutt. GRINDELIA. Stiff, upright biennial, resinous-viscid, with bright yellow flowers. Leaves sessile, alternate and spinulous-serrate. Involucral scales erect or the lower tips spreading. Heads many-flowered, radiate; ray pistillate. Achenes short and thick, with 1–2 short teeth at the summit; awns 2. It always occurs gregariously. A large area beset with it at the railroad station at Lavergne, Rutherford county. Gathered for use in its flowering season in July.

Solidago odora, Ait. SWEET-SCENTED GOLDENROD. Perennial herb with slender 2–3° high stems, often reclined, bearing very small heads forming a short and broad one-sided panicle, rays deep yellow, 3–4, rather large. Leaves linear lanceolate,

pellucid-dotted. Borders of thickets and fallow fields, frequent. The crushed leaves exhale a pleasant anisate odor. It is a pretty plant and deserves a place in the flower-garden. Fl. in July, when it should be collected before the flowers all expand. Eli Lilly's Drug-list.

Erigeron Canadensis, L. CANADA FLEABANE. A very obnoxious weed in field and garden. It exists in all sizes from a feeble dwarf 3′ high, in absolutely sterile soil, to 6–8° high in productive soil. It is an erect-growing, wand-like, weedy-looking annual; leaves linear, mostly entire, the radical cut-lobed, heads very numerous and small, cylindrical, panicled. Rays inconspicuous, in several rows, scarcely longer than the pappus; pappus simple. Ligule of the ray-flower shorter than the tube; white. It has spread over the whole world and grows in all kinds of soil, on old walls, etc. The leaves and tops of this species are collected before flowering, to be subject to distillation, by which an essential oil passes over. Oleum Erigerontis.

Erigeron annuus, Pers. DAISY FLEABANE. A common annual weed, in pastures and waysides, stems 3–5° high, branched, beset with spreading hairs; leaves coarsely and sharply-toothed; the lowest ovate, tapering into a margined petiole, the upper ovate-lanceolate, acute and entire at both ends; heads corymbed; rays white, tinged with purple, not twice the length of the bristly involucre; pappus double, the outer a crown of minute scales, the inner of deciduous fragile bristles, usually wanting in the ray. Fl. May–June. The herb.

Erigeron Philadelphicus, L. FLEABANE. The most obnoxious of the three, having the habit of invading the meadows, especially the bluegrass. It kills out the grass and makes the hay unfit for baling. Hairy, stem leafy, corymbed, bearing several small heads; leaves thin, with a broad midrib, oblong; the upper smoothish, clasping by a heart shaped base, mostly entire, the lowest spatulate, toothed; rays innumerable and very narrow, rose purple or flesh color. Fl. June–September. The herb.

Silphium laciniatum, L. ROSIN-WEED. COMPASS-PLANT. Coarse and tall, rough perennial herb with copious, resinous juice, the terete, alternate-leaved stem from a very large and thick root. Rough-bristly throughout, stem 3–12° high, leafy; leaves pinnately parted, petioled, but dilated and clasping at the base; their divisions lanceolate or linear, acute, cut-lobed or pinnatifid, rarely entire; heads few 1–2′ broad, sessile or short-peduncled along the naked summit; scales ovate, tapering into long and spreading rigid points; achenes broadly winged and deeply notched, 6″ long. July. Lower and root-leaves vertical, 12–30′ long, ovate in outline, disposed to present their edges north and south; hence called compass plant. Apparently not common in this State. The fluid extract of the herb is used.

Silphium perfoliatum, L. CUP-PLANT. Coarse and tall, rough perennial; stem square; leaves opposite, connate, 6–15′ long, ovate, coarsely toothed, the upper united by their bases and forming a cup-shaped disk, the lower abruptly narrowed into winged petioles which are connate by their bases; heads corymbose; scales ovate; achenes winged and variously notched. Loamy soil, along streams. Nashville, Franklin pike beyond reservoir. Fl. July–August. The root is used.

Gnaphalium polycephalum, Michx. COMMON EVERLASTING. An humble annual weed of a dull gray color. Grows from 8′–2° high, slender, erect, woolly, slightly fragrant; leaves lanceolate, tapering at the base, with undulate margins, not decurrent, smoothish above; heads clustered at the summit of the panicled-corymbose branches, ovate-conical before expansion, then obovate. Scales of the involucre whitish ovate and oblong, rather obtuse. Corolla whitish, insignificant. Pastures and old fields, especially in new clearings with the next. Fl. July-October. The herb.

Gnaphalium decurrens, Ives. MOUSE-EAR. Very similar to the foregoing and collectable for the same. More stout, erect, 1–2° high, annual or biennial, branched at the top, clammy-pubescent, white-woolly on the branches, bearing numerous

heads in dense corymbed clusters; leaves linear-lanceolate, partly clasping, decurrent; scales yellowish-white, oval, acutish. Frequent in the uplands, in sandy soil. July-September. The herb, collected in flower.

Parthenium integrifolium,, L. AMERICAN FEVERFEW. A rough-pubescent perennial with an upright stiff stem, terminating in a dense, flat corymb; leaves alternate, oblong or ovate, crenate-toothed, or the lower 3–6′ long, cut-lobed below the middle; heads many, in a very dense flat corymb. Flowers inconspicuously radiate; ray-flowers 5, with very short and broad obcordate ligules not projecting beyond the woolly disk, pistillate and fertile; disk-flowers staminate with imperfect styles, sterile. Involucre hemispherical, of two ranks of short ovate or roundish scales. Receptacle conical. Achenes only in the ray, obcompressed, surrounded by a slender callous margin, crowned with the persistent ray-corolla and a pappus of two small chaffy scales. A substitute for the European Chrysanthemum Parthenium or Feverfuge, which in the variety with double flowers is a favorite garden ornament. Our species is very frequent in the argillaceous soils of the oak barrens. June-August. The whole plant in flower.

Ambrosia artemisiæfolia, L. RAGWEED. Covers all fields after wheat harvest. A coarse homely annual weed, much branched, 1–3° high, hairy or roughish pubescent; leaves thin, twice pinnatifid, smoothish above, paler or hoary beneath; sterile flowers in single or panicled racemes or spikes; sterile involucre top-shaped of 7–12 scales united. Fertile, involucre (fruit) oblong or top-shaped, closed, pointed, resembling an achene, obovoid or globular, armed with about 6 short acute teeth or spines. A fluid extract is prepared from the leaves.

Xanthium spinosum, L. COCKLEBUR. A coarse and vile weed, perhaps the most unpleasant to deal with. It is an annual, the low and branching stout stems beset with slender, yellow, 3-parted, stout spines at the axils; leaves lanceolate or ovate-lanceolate, tapering to a short petiole, white-downy beneath,

often 2–3-lobed or cut. Sterile involucres and flowers as in Ambrosia, but the scales separate and receptacle cylindrical; fruit ½′ long, pointed with a single short beak. Fl. July. Many years ago it reached East Tennessee and spread along the East Tennessee & Georgia Railroad about all towns and settlements. It is also habituating now about Nashville. A fluid extract is prepared from the herb. Collect in flowering season.

Rudbeckia laciniata, L. CONE-FLOWER. A stately perennial with smooth, branching stems 3–7° high, with showy terminal, yellow flower-heads. Leaves smooth or roughish, the lowest pinnate, with 5–7 cut or 3-lobed leaflets; upper leaves irregularly 3–5 parted, the lobes ovate-lanceolate, pointed, or the uppermost undivided; heads long-peduncled; disk at first hemispherical, becoming columnar at maturity; chaff truncate, downy at the tip, rays oblanceolate 1–2′ long, drooping. Scattered specimens found on the ridges near Springfield. In quantity it is found in the mountain gorges of East Tennessee, Wolf Creek. The herb should be collected in summer.

Echinacea purpurea, Mœnch. BLACK SAMPSON. PURPLE CONE-FLOWER. Perennial herb, with stout and simple flowering stems 1–2° high, from strong, black, cylindrical or forked roots of pungent taste. Flowers solitary, terminal, large, rose-color, purplish and sometimes white. Leaves rough, often serrate; the lowest ovate, 5-nerved, veiny, long-petioled; the others ovate-lanceolate, alternate. Heads many-flowered, radiate; the rays very long, drooping, pistillate, but sterile. Scales of the involucre imbricated, lanceolate, spreading. Receptacle conical; the spiny-tipped chaff longer than the disk-flowers. Achenes short, 4-sided; pappus a small toothed border. In Indian practice it was used externally as a poultice and internally as a decoction against rattlesnake bite. Fl. July. Scatteringly over the State in argillaceous soils.

Echinacea angustifolia, DC. NARROW-LEAVED CONE-FLOWER. Very much like the former, but lower and heads smaller.

Leaves and stems bristly-hairy. Leaves linear lanceolate, attenuate at base, 3-nerved, entire. In the cedar glades, rather infrequent. Fl. July–August. Very recently it has been claimed to be a very efficient remedy in scrofulous and syphilitic affections. A fluid extract is prepared from the root.

Helianthus tuberosus, L. TOPINAMBOUR. JERUSALEM ARTICHOKE. Stout, 6–10° high, herbaceous perennial of the sunflower type. Stem pubescent or hirsute, branching at summit, leaves alternate, ovate or subcordate, accuminate, thickish-membranaceous; bracts of the involucre lanceolate, attenuate, acuminate, hirsute; rays 12–20, often 1½′, usually 1′ long. Achenes quadrangular-compressed, long and slender, pubescent at summit and margin; bracts of the receptacle hirsute-pubescent. Rootstocks horizontal, enlarging at apex into oval or fusiform fleshy tubers, which in cultivation become large, oval or roundish, sweet and edible. Fl. August–September. Rich alluvial soil and river bottoms, over the State. Imported from Canada in the early part of the seventeenth century, and long extensively cultivated in fields and gardens in England and France, for food for cattle and for culinary purposes, until it was gradually displaced by the potato. It possesses the highest percentage of sugar with 147.5 per M., while parsnips contain only 120 per M. When nicely cooked they are well flavored and more nutritious than potatoes. Moreover they may be eaten by invalids when debarred from the use of other vegetables. The name, "Jerusalem Artichoke," is a corruption of the Italian "Girasole Articocco," or Sunflower Artichoke.

Helianthella tenuifolia, Torr. & Gray. HELIANTHELLA. A very handsome plant belonging to the sunflower tribe. The slender and generally simple stem rises from a narrow, somewhat moniliform horizontal tuber. Leaves very narrow with revolute margins. Rays orange yellow, 1½′ long, 10–15; achenes slightly pubescent, quadrangular and moderately, or the outer very little compressed, the anterior and posterior angles narrowly and acutely margined, surmounted by subu-

late short, persistent, chaffy and pointed teeth, and with some minute intermediate squamellæ. Seems to be very local, as I found it but once, but there abundantly in open barren lands east of Tullahoma. The root, collected in fall.

Verbesina helianthoides, Michx. Perennial; stem hairy 1–3° high, widely winged by the ovate to ovate-lanceolate, sessile, alternate leaves, which are rough above and soft-hairy beneath. Heads broad, solitary or few, several to many flowered, rays 8–15, pistillate or sometimes neutral, sterile; achenes winged, tipped with 2 fragile awns. Copses and hillsides in limestone regions. Frequent in the vicinity of Nashville. Plant esteemed in the South as a domestic remedy in chronic catarrh of the bladder.

Bidens bipinnata, L. SPANISH NEEDLES. Smooth annual, branched; leaves 1–3 pinnately parted, petioled; leaflets ovate-lanceolate, mostly wedge-shaped at the base, heads small, on slender peduncles; outer involucre of linear scales equalling the short pale-yellow rays, achenes 4-grooved and angled, nearly smooth, 3–4 awned. A malicious weed, leaving its barbs at the slightest touch in the skins of animals and clothes of men. Parke, Davis & Co. prepare a fluid extract from the herb. Fl. July–October.

Helenium autumnale, L. SNEEZE-WEED. Erect, perennial, branching herb, nearly smooth, 1–6° high, leaves alternate, decurrent on the angled stem and branches, toothed, lanceolate to ovate-oblong. Heads about 6″ broad, rays several, wedge-shaped, 3–5-cleft, fertile, yellow. Involucre small, reflexed, the scales linear or awl-shaped, disk yellow. Achenes top-shaped, ribbed; pappus of 5–8 thin, one-nerved chaffy scales, the nerve usually extended into a bristle or point. Receptacle oblong, naked. Whole plant sprinkled with bitter, aromatic, resinous globules. Damp places, common. Fl. July–August. The herb.

Anthemis Cotula, DC. MAY-WEED. An annual, branching, strong and unpleasant-scented herb, of acrid taste. Leaves finely 3-pinnately dissected, the solitary terminal flowerheads

with white rays and yellow disk. Involucre hemispherical, of small imbricated dry and scarious scales shorter than the disk; receptacle without chaff near the margin. Pappus none. It is generally better known as dog fennel, and is an intrusive weed. Eli Lilly & Co. prepare a fluid extract from the herb.

Achillea Millefolium, L. YARROW OR MILFOIL. Perennial herb, with small corymbose heads. Stems simple; leaves twice-pinnately parted; the divisions linear, 3–5 cleft, crowded; corymb compound, flat-topped; involucre oblong; rays 3–4 short, white. Achenes oblong, flattened, margined; pappus none. Roadsides and dry pastures, adventitious but naturalized from Europe. It makes an esteemed veterinary medicine. The flowering plant.

Chrysanthemum Leucanthemum, L. OX-EYE DAISY. Perennial herb with single stem 1–1½° high, naked above and bearing a single large head. Rootleaves spatulate, petioled, the others partly clasping, all cut or pinnatifid-toothed. Head 1½′ wide, rays numerous, fertile. Scales of the broad and flat involucre imbricated with scarious margins. Receptacle flat or convex, naked. Disk-corollas with a flattened tube. Achenes of disk and ray similar, striate, without pappus. Native from Europe and largely spreading over the State. Eli Lilly & Co. use the flowering herb for a fluid extract. Fl. the whole summer.

Tanacetum vulgare, L. COMMON TANSY. Bitter and acrid strong-scented perennial, with 1–3 pinnately dissected leaves and corymbed heads. Stem 2–4° high, smooth; leaflets and the wings of the petiole cut-toothed; corymb dense; pistillate flowers terete, with oblique 3-toothed limb, pappus 5-lobed. Fl. summer. The leaves are collected in flowering season. Frequently cultivated in gardens and escaped into fence-rows.

Artemisia Absinthium, L. WORMWOOD. An erect undershrub. Leaves silky, hoary, tripinnatisect; the segments lanceolate, somewhat dentate, obtuse. Heads discoideal, homogamous

or heterogamous. Florets of the ray in one row, usually female and 3-toothed, with a long bifid, protruding style; of the disk 5-toothed, hermaphrodite, or, by the absorption of the ovary, sterile or male; the heads small, racemous-paniculate, globose, nodding. Involucral scales, imbricated, dry, scarious at the edge, exterior scales somewhat silky, linear, lax; interior ones rounded, scarious, somewhat naked. The herb, covered with silky hairiness, is intensely bitter, and possesses a strong, peculiar odor. The dried herb with the flowers is officinal, and should be collected during flowering season. Escaped from cultivation.

Inula Helenium, L. ELECAMPANE. Stout perennial 3–5° high; leaves large, woolly beneath; those from the thick root ovate, petioled, the others partly clasping; peduncles few, one-headed, corymbose at the apex. Head many-flowered, heterogamous; florets of the ray females, in one row, sometimes by abortion sterile, usually ligulate, rarely somewhat tubular and trifid; those of the disk hermaphrodite, tubular, 6-toothed. Involucre imbricated in several rows. Receptacle flat or somewhat convex, naked. Anthers with two setæ at the base. Achene without a beak, 4-cornered. Pappus uniform, in one row, composed of capillary roughish setæ. Conspicuous by its large heads of yellow flowers. The root is large and has an aromatic camphor-like taste. It is originally a European plant, but it escapes from gardens and has long been naturalized. Found in East Tennessee at Sweetwater. The root is officinal.

Polymnia Uvedalia, L. LEAF-CUP. One of the largest of our herbaceous species. A tall, branching perennial, 4–10° high, roughish hairy; leaves broadly ovate, the larger 1° wide angled and toothed, nearly sessile, the lower palmately lobed, abruptly narrowed into a winged petiole. Heads broad, many-flowered, radiate; disk flowers perfect but sterile. Involucral scales in two rows, outer very large, 5 in number, leaf-like and spreading; the inner small and membranaceous partly enclosing the thick triangular obovoid achenes. Re-

ceptacle flat, membranaceous chaffy, pappus none. Rays 10–15 linear oblong, much longer than the inner scales of the involucre, yellow; achenes strongly striate. At the foot of hills, where rich soil accumulates. The plant exhales a peculiar resinous odor. The heavy root is collected in autumn.

Erechtites hieracifolia, Raf. FIRE-WEED. A tall, coarse annual; stem-grooved 2–8° high, the alternate simple leaves lanceolate or oblong, acute, cut-toothed, sessile, the upper auricled at base. Heads many-flowered; the flowers all tubular and fertile; the marginal pistillate, with a slender corolla. Scales of the cylindrical involucre in a single row, linear, acute, with a few small bractlets at the base. Receptacle naked. Achenes oblong, tapering at the end; pappus copious, of very fine and white soft hairs. The whitish flowers in paniculate-corymbed heads. Everywhere in moist woods, always appearing in recent clearings, where the ground has been burned over. The leaves collected in summer.

Arctium Lappa, L. BURDOCK. Coarse biennial weed, with large unarmed and petioled leaves; leaves roundish or ovate and mostly cordate, or lanceolate with cuneate base, smooth above, somewhat floccose-tomentose beneath, mostly sinuate-denticulate. Heads many-flowered; flowers all tubular, perfect and similar. Involucre globular; the imbricated scales coriaceous and appressed at the base, attenuate to long stiff points with hooked tips. Receptacle bristly. Achenes oblong, flattened, wrinkled transversely; pappus short, of numerous rough bristles, separate and deciduous. Its flowers are purple and appear from July–October. It has spread over the whole world, and is a troublesome weed to the agriculturist, always ready to make its appearance in neglected ground, growing rapidly, and, with its large, spreading leaves checking all other vegetation. For medicinal purposes the leaves, root and seeds are collected.

Silybum Marianum, Gært. THE MILK THISTLE. Robust herbaceous plant, belonging to the thistles, among which it is distinguished by having the filaments united and the pap-

pus in many rows. It grows 3–5° high, with a furrowed stem, and large spreading wavy-spinous leaves, of which those next to the root are pinnatifid and variegated with green and milk-white. The involucre is subglobose and spinous, and the florets purple with long tubes. It was formerly cultivated (in England and France), the young leaves being used as a spring salad, the roots boiled as a pot-herb, and the heads treated like the heads of the artichoke. It is a recent immigrant and was found at Sewanee and on a pasture two miles west of the city of Nashville. It may, perhaps, spread and become more general. Parke, Davis & Co. have it on their drug list.

Cantaurea benedicta, L. St. Benedict's Thistle. Blessed Thistle. Low branching annual, with clasping scarcely pinnatifid cut leaves, and large sessile leafy-bracted heads; flowers yellow. Heads many flowered; flowers all tubular, the marginal often much larger and sterile. Receptacle bristly. Involucre ovoid or globose, imbricated, the scales margined or appendaged. Achenes terete, 10 dentate, attached obliquely or at the base; pappus of 10 long bristles and 10 short inner ones. A recent immigrant from the Atlantic States, where it is naturalized from Europe. Formerly much used in low fevers, it was for awhile abandoned to be recently again brought into notice. Old fields near West Nashville. Eli Lilly & Co. prepare a fluid extract.

Senecio aureus, L. Squaw-Weed. Golden Ragwort. Smooth herb 1–2° high from a perennial root; leaves thin, the radical simple and rounded, the larger ones mostly heart-shaped, crenate-toothed, long-petioled; lower stem-leaves lyrate, upper ones lanceolate, cut-pinnatifid, sessile or partly clasping; corymb umbel-like, naked. Rays pistillate, involucre bellshaped, simple or with a few bractlets at the base; the scales erect-connivent. Receptacle flat, naked. Pappus of numerous very soft and slender capillary bristles. It is a variable plant. Can be found in early spring in moist ground and shady cliffs; common. The herb is used.

Hieracium venosum, L. RATTLESNAKE-WEED. Smooth and slender perennial, leafs all radical or near the base, obovate or oblong, nearly entire, scarcely petioled, thin and pale, purplish and glaucous underneath, often hairy along the midrib, marked above with purple veins. Stem or scape 1–2° high, naked, or with a single leaf, smooth and slender, forking above into a spreading, loose corymb. Heads 12-many flowered. Involucre more or less imbricated. Achenes short, oblong or columnar, striate, not beaked; pappus a single row of tawny and fragile capillary rough bristles. Dry woods. July–September. Collect in flower.

Prenanthes serpentaria, Pursh. RATTLESNAKE-ROOT. Perennial herb with upright leafy stem 2° high, nearly smooth; stem corymbose-panicled at the summit; leaves mostly deltoid, roughish; the lower variously 3–7 lobed, on margined petioles; the upper oblong-lanceolate, mostly undivided, nearly sessile; involucre (greenish, rarely purplish, sometimes highly bristly) of about 8 scales, 8–12 flowered, flowers purplish, greenish-white or cream color. Achenes short, linear oblong, striate or grooved, not contracted at the apex. Pappus of copious straw-color or brownish and rough, capillary bristles. Western part of the State, Dickson county. Abundant. The herb.

Prenanthes altissima, GALL OF THE EARTH. Smooth, stem tall and slender, 3–7° high; the heads in small axillary and terminal loose clusters, forming a long and wand-like leafy pannicle; leaves membranaceous, all petioled, ovate, heart-shaped or triangular, and merely toothed and cleft, with naked or winged petioles or frequently 3–5 parted, with the divisions entire or again cleft; involucre slender, greenish, of 5 scales 3–6 flowered. Fl. July–September. A traditional belief, handed down from the Indians, attributes marvelous power to this and the foregoing in counteracting the poison of rattlesnake bites. The bruised leaves are laid on the swollen parts, and a decoction is taken internally.

Prenanthes alba, L. WHITE LETTUCE. RATTLESNAKE-ROOT.

Smooth and glaucous 2–4° high; stem corymbose-panicled at the summit; leaves angular or triangular-halbert-formed, sinuate toothed or 3–5 cleft, the uppermost oblong and undivided; involucre purplish of about 8 scales, 8–12-flowered. Haywood County. Eli Lilly & Co. prepare a fluid extract from it. The herb.

Taraxacum officinale, Web. **Taraxacum Dens-leonis**, Desf. DANDELION. Herb with perennial rootstock, terminated by a tuft of leaves, from the center of which emerge smooth, hollow, leafless, unbranched stalks, surmounted by a single head of bright yellow flowers. The involucre consists of an outer row of bracts, which are spreading or reflexed, and an inner row which are erect. The receptacle on which the flowers are placed is flat and smooth, the corollas all strap-shaped and yellow. Involucre fully reflexed at maturity of the fruit, which, with the expanded pappus, raised on the elongated beak, is displayed in a globose body. If the flowers be examined previous to maturity, the beak is seen to be very short, but it rapidly lengthens as the fruit ripens. Fl. March–July. Leaves and roots collected separately.

Cichorium Intybus, L. CHICORY. It is at home over the whole of Europe with the exception of the extreme northern parts. It is a perennial. Its nearest relative is Cichorium Endivia, the Endive, which is an annual, a native of northern China, and since ancient times known as a culinary vegetable. The wild chicory has a long tap-root, and a rigid, slightly hairy, branched stem, with a few sessile, clasping leaves. The lower leaves spread on the ground, and are pinnately lobed or runcinate, and coarsely toothed, while the upper ones are scanty and embrace the stem by the two pointed lobes at their base. The sessile heads 2–3 together, axillary and terminal. Flowers bright blue. The heads are several-flowered. Involucre double, the inner of 8–10 scales, the outer of 5, short and spreading, herbaceous bracts. Achenes striate; pappus of numerous small scaffy scales, forming a short crown. The chicory has also from olden times been cultivated in culinary gardens, and its blanched leaves used

as a salad. Since more than one hundred years the so-called root has been used as a substitute for, or rather an adulteration of coffee, either by itself or as an admixture to the roasted coffee bean. It need hardly be said that chicory is entirely destitute of those properties which render coffee an agreeable and nutritive beverage. Its medicinal qualities are closely allied to those of dandelion. It is a common weed at roadsides and in waste places in the Atlantic States, but yet rare here. Fl. June–July. The root is used for an extract.

Lactuca Canadensis, L. WILD LETTUCE. Succulent, leafy-stemmed annual or biennial herb, with panicled heads. Tall, 4–9° high, smooth or nearly so, glaucous; leaves 6–12′ long, pale beneath, mostly sinuate-pinnatifid, caulines sagittate, clasping, the upper lanceolate and entire. Heads several to many-flowered. Involucre cylindrical or in fruit conical; scales imbricated in 2 or more sets of unequal lengths. Achenes very flat, orbicular to oblong, 1–nerved on each face, with a filiform beak. Very abundant in waste grounds or new clearings. The leaves and the whole plant are used. Lactucarium, an extract similar to opium, is prepared from it.

LOBELIACEÆ. (LOBELIA FAMILY.)

Lobelia cardinalis, L. CARDINAL-FLOWER. A tall smoothish perennial, 2–3° high. Leaves oblong-lanceolate, slightly toothed; racemes elongated, rather 1-sided, flowers axillary, deep red; the pedicels much shorter than the leaf-like bracts. Calyx 5-cleft, with a short tube. Corolla with a straight tube, split down on the (apparently) upper side, somewhat 2-lipped; the upper lip of 2 rather erect lobes, the lower lip spreading and 3-cleft. Two of the anthers bearded at the top. Pod 2-celled, many seeded, opening at the top. A very showy plant, deserving a place in the flower-garden. It is rarely ever used, but it appears among Ely Lilly's fluid extracts. Very frequent in low, damp or swampy places. Fl. in fall. The flowering herb is to be collected.

Lobelia syphilitica, L. GREAT BLUE LOBELIA. BLUE CARDINAL. Another stout, leafy-stemmed perennial, 1–3° high, somewhat hairy. Leaves thin, acute at both ends, 2–6′ long, irregularly serrate; flowers nearly 1′ long, light blue, pedicelled, longer than the leafy bracts; calyx hirsute, the sinuses with conspicuous deflexed auricles, the short tubes hemispherical. In similar localities like the former. Nearly obsolete, its former reputation dying out with the Indians amongst whom it was in use. It is on the lists, however. Collect the flowering herb in fall.

Lobelia inflata, L. INDIAN TOBACCO. A homely annual weed 1–2° high, with simple, but oftener paniculately-branched stems, pubescent with spreading hairs; leaves ovate or oblong, obtusely-toothed, gradually diminishing into leaf-like bracts, which exceed the lower short-pedicelled flowers; calyx-tube ovoid. Fl. August-September. The herb, leaves and seeds are collected, separately. Over the whole State in dry open woodlands and pastures. The older physicians will well remember the excessive use of this drug by many of the profession 40–50 years ago. Happily, the present generation is better advised, and it is scarcely ever used now. Even in spasmodic asthma, for which it was formerly held to be a specific, we have now more effective remedies, which, moreover, are devoid of the distressing sequels of its administration.

ERICACEÆ. (HEATH FAMILY.)

Epigæa repens, L. GROUND LAUREL. TRAILING ARBUTUS. A prostrate or trailing, scarcely shrubby plant, bristly with rusty hairs, with evergreen and reticulated rounded and heart-shaped alternate leaves, on slender petioles, and with rose-colored flowers in small axillary clusters, from scaly bracts, exhaling a rich spicy fragrance, dimorphous as to style and stamens and subdiœcious. Corolla salverform; the tube hairy inside, as long as the ovate-lanceolate pointed and scale-like nearly distinct sepals. Stamens 10 with slender filaments; anthers oblong, awnless, opening lengthwise. Style

slender, its apex (as in Pyrola) forming a sort of ring or corolla around and partly adnate to, the 5 little lobes of the stigma. Capsule depressed-globular, 5-lobed, 5-celled, many-seeded. It is very abundant in the Cumberland and Alleghany Mountains. It is strictly bound to silicious soil and eschews limestone. It deserves cultivation in the flower-garden, but is very sensitive to transplantation. Fl. early spring. The leaves are collected.

Gaultheria procumbens, L. WINTERGREEN. A small undershrub of creeping and decumbent habit, its slender but ligneous stems extensively creeping, generally underground, sending up flowering shoots a span high; leaves crowded toward the top, obovate and oval, mucronate, more or less serrulate with bristly-tipped teeth, pedicels mostly solitary in the axils, 2-bracteolate close under the calyx. Calyx 5-cleft, its lobes imbricated, corolla short-campanulate, 5-lobed; stamens 10; filaments dilated toward the base, glabrous; apex of the anthers obscurely 4-pointed. The "baccate calyx," enclosing the capsule, representing a red berry, which, with the foliage, is aromatic tasted, with flavor of sweet birch, but warmer. Fl. June–July. In inexhaustible quantity throughout the higher mountains of East Tennessee. Collect the herb, from which an essential oil is distilled. Ol. Gaultheriæ.

Oxydendrum arboreum, DC. SOUR-WOOD. SORREL-TREE. Tree 15–40° high; leaves membranaceous and deciduous, oblong or lanceolate, 4–6′ long, acuminate, serrulate, glabrous, or at first glaucous, veiny, slender petioled; inflorescence a panicle of many-flowered racemes terminating in the leafy shoots of the season, appearing in the early summer, flowers tardily opening. Calyx short, naked at the base; corolla from cylindraceous to ovate-conical 3″ long, white, minutely pubescent. Anthers linear, unappendaged; the cells opening by a long chink. Capsule ovoid-pyramidal. Seeds all erect, scobiform. Bracts and bractlets minute and deciduous. Throughout the State in siliceous or argillaceous soils, never in limestone. The leaves are used.

Kalmia latifolia, L. LAUREL. CALICO-BUSH. Widely branching evergreen shrub, 3–10, or in the South Alleghanies even 30° high, with very hard wood; leaves alternate or occasionally somewhat in pairs or threes, oblong or eliptical-lanceolate, acute or acutish at both ends, petioled, bright green; inflorescence viscid pubescent; flowers produced in early summer; the corymbose fascicles numerous and crowded in compound terminal corymbs. Corolla crateriform or saucer-shaped, with a short, narrow tube, 5-lobed, 10-saccate below the limb. Stamens 10; the short anthers lodged in the sacs of the corolla in the bud, so that the filaments are recurved when this expands. Capsule tardily septicidal. On siliceous or argillaceous rocks or soils, descending from mountain heights to the hills and ravines of the whole State. Fl. May–June. Fatal to sheep and cattle when browsing on it. The leaves are used.

Rhododendron maximum, L. GREAT LAUREL OR ROSE BAY. Stout shrub or small tree 6–35° high; leaves elongated or lanceolate-oblong, acute or short-pointed, narrowed toward the mostly acute base, 4–10′ long, commonly whitish beneath; pedicles viscid; calyx-lobes oval, equalling the glandular ovary; corolla mostly 5-lobed and little irregular, pale rose-color or nearly white, greenish in the throat on upper side, and with some yellowish or reddish spots, campanulate, an inch long, rather deeply 5-cleft into oval lobes. Capsule short. It is an evergreen with large coriaceous foliage and magnificent flowers greatly beautifying and distinguishing mountain scenery. Fl. July. The leaves are used.

Chimaphila umbellata, Nutt. PRINCE'S PINE. PIPSISSEWA. Low perennial with running lignescent stolons, thick and shining leaves in irregular clusters or whorls, often branched, leaves cuneate-lanceolate, with tapering base, sharply serrate, not spotted. Peduncle 4–7 flowered, bracts narrow, deciduous. Calyx 5-parted. Cells of the anther oblong, with a short narrow neck under the orifice, imperfectly 2-locellate. Dry

woods in the Cumberland Mountains, especially under conifers; not so frequent as the next. Fl. July. The whole herb.

Chimaphila maculata, Persh. SPOTTED WINTERGREEN. A span or more in height, more simple. Leaves oblong or ovate-lanceolate, obtuse at base, 1–2′ long, sparsely and very sharply serrate, the upper surface variegated with white; peduncle 2–5 flowered. Bracts linear-subulate, filaments villous in the middle, flower comparatively large, $\frac{3}{4}$′ in diameter. Dry woods over the State. In the country it is much esteemed on account of its stomachic and tonic qualities, and similar qualities seem to belong to it as to Uva Ursi or Bear-Berry. The whole plant is collected.

PRIMULACEÆ. (PRIMROSE FAMILY.)

Anagallis arvensis, L. PIMPERNEL. Low glabrous annual; stems spreading, leaves ovate, sessile $\frac{1}{2}$–1′ long, mostly shorter than the pedicels, in threes, or sometimes the uppermost alternate. Corolla completely rotate, 5-parted, the rounded lobes convolute in the bud, exceeding the the 5-parted calyx. Calyx-lobes narrow, nearly equalling the red corolla, the divisions of which are minutely denticulate or glandular ciliate. An immigrant from the East, where it is naturalized. Rare in this State.

EBENACEÆ. (EBONY FAMILY.)

Diospyros Virginiana, L. PERSIMMON. A large tree 20–70′ high, with a rough bark. Leaves thickish, more or less pubescent when young, commonly glabrate, oval, 2–5′ long. Flowers essentially dicœcious, but the fertile flowers (commonly solitary in the axils) may have sterile stamens, more or less polliniferous; the sterile flowers much smaller, usually racemose or clustered, and with more numerous stamens. Calyx 4–5 lobed, enlarging under the fruit. Corolla campanulate, short salverform or urceolate. Fruit plum-like, an inch in diameter, excessively astringent when green,

yellow when ripe, and when frosted sweet and luscious. Over the State; loves to take possession of ruined farm lands.

OLEACEÆ. (Olive Family.)

Fraxinus Americana, L. White Ash. Large timber-tree with rather light tough wood. Branchlets and petioles glabrous, leaves opposite and odd-pinnate, leaflets 7–9, from ovate to oblong-lanceolate, mostly acuminate, entire or sparsely serrate or denticulate, 3–5′ long, pale or whitish and often pubescent beneath. Flowers diœcious, apetalous, in dense panicles, which are developed from separate buds from upper axils of the preceding year. Fruit entire, dry, indehiscent, winged only from the upper part of the terete body. Fl. April. The bark is used.

Ligustrum vulgare, L. Privet. This shrub is planted for ornamental hedges, and springs up sometimes from seeds transported by animals. It shows no tendency to spread. It grows 6–10° high; leaves opposite and entire, oblong or lanceolate. Flowers small and white, disposed in thyrse-like panicles at the ends of the young branches. They have a cup-shaped deciduous 4-toothed calyx and a funnel-shaped 4-lobed corolla, and the fruit is a globular bluish-black berry. Fl. May. The leaves are collected.

Chionanthus Virginica, L. Fringe-tree. Shrub or small tree. One tree, growing on the foot of the mountains, at Cowan, I measured to be 10′ diameter 4° above the ground, by perfectly regular form of crown. The leaves are deciduous, opposite, entire, oval or oblong, 3–6′ long. Flowers in loose, compound panicles from the uppermost axils of the leaves of the preceding year. Calyx 4-cleft, persistent. Corolla of 4 long and linear petals, which are plane in the bud with slightly induplicate margins, and united only at the base. Stamens 2, rarely 3, short. Style short. The drooping loose panicles of an inch long flowers are very beautiful. Fruit bluish-black, oval, ½′ long. It is very frequently found in cultivation, but grows wild over the State, along streams and in moist places. Fl. April. The bark of the root is collected.

APOCYNACEÆ. (Dogbane Family.)

Apocynum androsæmifolium, L. Dogbane. Indian Hemp. Herbaceous plant with milky acrid juice, a foot to a yard high, glabrous or rarely branched above; branches widely spreading, leaves ovate or roundish, distinctly petioled. Cymes loose, spreading, naked and mostly surpassing the leaves; Calyx small, deeply 5-cleft. Corolla campanulate, 5-lobed, toward the base bearing 5 small triangular-subulate appendages, alternate with the stamens; stamens on the base of the corolla. Filaments very short, broad, anthers sagittate, acute. Disk fleshy at base, the free summit 5-lobed. Stigma ovoid, 2-lobed. Follicles slender, terete. Seeds numerous, with a long coma at apex. Fl. June–July. Borders of roads and deserted old fields; very common. The root.

Apocynum cannabinum, L. Indian Hemp. Very similar to the former. Glabrous or more or less pubescent; stem and branches upright or ascending 2–3° high, terminated by erect and close, many-flowered cymes, which are usually shorter than the leaves; leaves from oval to oblong and even lanceolate, short petioled or sessile with rounded or obscurely cordate base; corolla greenish-white, with nearly erect tubes, the tube not longer than the lanceolate divisions of the calyx. Moist grounds, common. Fl. July. From the very tough-fibrous liber the Indians prepare a substitute for hemp, of which they make twine, bags, fishing-nets and lines, as well as linen for their own use. The root is collected.

ASCLEPIADACEÆ. (Milkweed Family.)

Asclepias tuberosa, L. Butterfly-Weed. Pleurisy-Root. Hirsute or roughish pubescent perennial herb, with a thickish root, 1–2° high, very leafy to the top; leaves from lanceolate-oblong to linear-lanceolate, sessile or slightly petioled; umbels several and mostly cymose at the summit of the stem; short peduncled, bearing orange-colored flowers. The flowers are distinguished by the peculiar aggregation and cohesion of the pollen into granulose or waxy masses (pol-

linia), one or two in each anther cell and connected with the stigma, or rather stigmatic disk, in pairs or fours, by means of 5 glands, alternate with the anthers. Corolla reflexed in anthesis. Hoods narrowly oblong, much surpassing the anthers, almost as long as the purplish or slightly greenish-orange oblong corolla-lobe, nearly equalled by the filiform-subulate horn; follicles cinereous-pubescent. Dry soils, old fields, growing in poor ground. Fl. May. The root, collected in summer.

Asclepias incarnata, L. Swamp Milkweed. Nearly glabrous or slightly pubescent, stem 2–3° high, 5–6° in Var. longifolia, very leafy to the top, sometimes branching; leaves oblong-lanceolate, or in Var. longifolia, which is with us the usual form, elongated or linear-lanceolate, 4–7 inches long, $\frac{1}{3}$–$\frac{1}{2}'$ wide, glabrous or with minute pubescence. Flowers purplish, small; hoods 1″ long and equalling the anthers; follicles naked, fusiform, erect, on erect pedicels. In river-swamps, very common. Fl. July. The rhizome, collected in summer.

Asclepias Cornuti, Decaisne. Common Milkweed. Finely soft-pubescent or tomentulose; leaves opposite, green and early glabrate above, oval or oblong, obtuse or roundish at base; short-petioled, transversely veined, peduncles little longer than the very numerous pubescent pedicels; corolla dull-purple or greenish-purple, the lobes ovate, 3–4″ long; hoods whitish, ovate, rather longer than the anthers, with a tooth on each side below the middle; the subulate horn short and incurved, column short. Stem stout and simple, 5° high. Frequent in fields and margins of woodlands. Fl. July. The rhizome.

LOGANIACEÆ. (Logania Family.)

Gelsemium sempervirens, Ait. Yellow Jessamine. Twining and glabrous shrubby plant, leaves evergreen, thin-coriaceous, shining, oblong or ovate-lanceolate, $1\frac{1}{2}$–$2\frac{1}{2}'$ long; peduncles very short, axillary, scaly-bracteolate, cymosely 1–3

flowered, calyx 5-parted, imbricated. Corolla open funnelform, 5-lobed, the lobes broad and imbricated in the bud. Stamens 5 on the tube of the corolla, anthers linear or oblong; style filiform; the 4 lobes stigmatose inside. Capsule elliptical, compressed contrary to the narrow partition, septicidal; the conduplicate valves at length 2-cleft at the apex. The flowers are showy and produced in abundance, March–April. Only on the southern border of the State, Chattanooga. The plant is poisonous. The rhizome should be collected before or after flowering.

Spigelia Marilandica, L. PINKROOT. SPIGELIA. A herbaceous plant with a large perennial rootstock; stem 1–2° high; leaves from ovate-lanceolate to ovate and acuminate, 2–4 long, closely sessile by a rounded base, one or two pairs of veins basal. Flower unilateral-spicate on the single or sometimes geminate or umbellate and naked terminal peduncles of a scorpioid inflorescence; bracts minute and subulate or wanting. Calyx 5-parted; the lobes narrow, usually very slender. Corolla tubular-funnelform or salverform, 15-nerved; stamens 5; anthers linear or oblong, 2-lobed at the base. Style filiform, articulated near or below the middle, puberulent or pubescent. Capsule didymous, somewhat compressed contrary to the partition, circumcissile above the cupule-like, persistent base, and 2-coccous, the carpels soon localicidally 2-valved. The very showy corolla is scarlet outside, yellow within, 1½′ long. Frequently and deservedly cultivated in gardens. The anthelmintic virtues of this plant were first learned from the Cherokee and Creek Indians, and the roots are still employed for this purpose by the country people. The roots are collected after blooming.

GENTIANACEÆ. (GENTIAN FAMILY.)

Sabbatia angularis, Pursh. AMERICAN CENTAURY. Pretty annual, 2° high, stem quadrangular with sharp angles, paniculately branched above; the branches leafy, all opposite; leaves cordate-ovate and clasping, 3–5 nerved; numerous and crowded branches few-flowered, pyramidally or somewhat

corymbosely cymose; calyx lobes linear, much shorter than the rotate corolla; lobes of the latter deep rose-color, obovate, fully ½′ long. Filaments filiform; style cleft to the middle, its lobes slightly clavate. Capsule globose. Pastures, edges of woodland sand barrens; common over the State. Fl. July. The herb.

Sabbatia brachiata, Ell. CENTAURY. Stem slightly angled 1–2° high; leaves from lanceolate oblong to linear, mostly obtusely 3-nerved at base; inflorescence thyrsiform-paniculate; the lateral cymes naked-pedunculate and about 3-flowered; calyx-lobes narrowly linear, shorter than or nearly equalling the light rose-color or nearly white corolla; lobes of the latter obovate-oblong, ½′ long. Abundant in the oak-barrens, f. i. at Tullahoma. The herb.

Sabbatia gracilis, Pursh. CENTAURY. Stem slender, branches and peduncles filiform, branches alternate, calyx-tubes very short, girding the base of the capsule; calyx-lobes very slender and as long as those of the corrolla (6–9″ long); style 2-cleft to the middle. Corolla bright rose-color, sometimes white. With the former. All three species answer the same purpose, and may be gathered together. They act as pure bitters, and make an indiginous substitute for gentian. Fl. June–July. The herb.

Gentiana Saponaria, L. SOAPWORT GENTIAN. Herbaceous perennial 1–1½° high, smooth or somewhat scabrous above; leaves from ovate-lanceolate or oblong to broadly lanceolate, 2–3′ long, more or less narrowed at the base; calyx lobes from linear to spatulate-oblong, mostly equalling and sometimes exceeding the tube; corolla light blue, an inch or more long, its broad and roundish short lobe erect, little and often not at all longer than the 2-cleft and many-toothed intervening appendages. Seeds conspicuously winged. The herb.

Gentiana ochroleuca, Frœhl. SAMPSON SNAKEROOT. Smooth, rather stout, a span to a foot high, often branching; leaves ovate, or the upper oblong, all conspicuously narrowed at the base, 1–3′ long, pale. Flowers sessile or nearly so in terminal

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and sometimes lateral leafy clusters. Calyx-lobes linear, unequal, longer than the tube; the longer little exceeded by the somewhat open-funnel form, greenish white corolla, which is greenish-veiny and often purplish-striped and $1\frac{1}{2}'$ long; its lobes triangular-ovate and acute, much exceeding the 3-angular and oblique and entire or sparingly toothed appendages. Dry, damp ground. Fl. September. It occurs scatteringly, and never in great numbers together. The root, collected in autumn.

Gentiana quinqueflora, Lam. FIVE-FLOWERED GENTIAN. A foot or two high, leafy; the larger plants branching; leaves ovate-lanceolate, with subcordate, partly clasping base, 3–7-nerved, the upper acute or cuspidate-acuminate; inflorescence thyrsoid-paniculate; the clusters 3–5-flowered; calyx one-fifth or one-fourth the length of the narrow, funnelform, bright-blue corolla; its lobes linear-subulate; corolla $\frac{1}{2}$–$\frac{3}{4}'$ long, its lobes ovate, 3-angular, short. Mountains of East Tennessee, Chilhowee and Frog Mountains. Not yet observed in the Cumberlands. It is the only handsome one of the species found in Tennessee. August–September. Eli Lilly & Co. use it for a fluid extract. The herb or root, collected in summer.

Frasera Carolinensis, AMERICAN COLUMBO. Tall and showy herbaceous biennial or triennial, 3–8° high, with a thick root, upright and mostly simple stems, bearing whorled leaves and numerous peduncled flowers in open cymes, disposed in an ample elongated panicle; smooth, leaves in fours, lance-oblong, the lowest spatulate, veiny; corolla $1'$ broad, light greenish-yellow, deeply 4-parted, wheel-shaped, each division with a glandular and fringed pit on the face, its divisions oblong, mucronate, longer than the narrowly-lanceolate calyx lobes, each with a large round gland below the middle; capsule much flattened, parallel with the flat valves. June. Over the State, single or in small patches. Never found many in one locality. Near Lavergne, Rutherford County, I found more than anywhere else. Fl. in June. Collect roots in fall.

POLEMONIACEÆ. (Polemonium Family.)

Polemonium reptans, L. Abcess-root. Low, smooth perennial, with alternate-pinnate leaves, the upper leaflets sometimes confluent, smooth throughout or slightly pubescent; stems weak and spreading, 6–10′ high, never creeping, as the name denotes; leaflets 5–15, ovate-lanceolate or oblong; corymbs few-flowered, flowers nodding. Calyx bell-shaped, herbaceous. Stamens equally inserted at the summit of the very short tube of the open bell-shaped or short funnel-form corolla; filaments slender, declined, hairy-appendaged at the base. Corolla light-blue, ½′ wide, capsules about 3-seeded. Woods, in all parts of the State. Early flowering. The root should be collected after flowering season.

HYDROPHILLACEÆ. (Waterleaf Family.)

Hydrophyllum Virginicum, L. Waterleaf. Succulent perennial, smoothish, 1–2° high; leaves pinnately divided; the divisions 5–7, ovate-lanceolate or oblong, pointed, sharply cut-toothed, the lowest mostly 2-parted, the uppermost confluent; peduncles longer than the petioles of the upper leaves, forked. Calyx-lobes narrowly linear, bristly ciliate, 5-parted, with minute appendages. Corolla bell-shaped, 5-cleft; the tube furnished with 5 longitudinal linear appendages opposite the lobes, which cohere by their middle, while the edges are folded inward, forming a nectariferous groove. Stamens and style exserted, filament 5-bearded. Capsule ripening 1–4 seeds. Woods in the higher mountains of East Tennessee. The creeping, scaly-toothed rootstock is used in homeopathic practice.

Lithospermum arvense, L. Gromwell. Minutely rough-hoary annual; stems erect 6–12′ high; leaves lanceolate or linear, veinless. Flowers on one side of the branches of a reduced cyme, imitating a spike or raceme, which is rolled up from the end and straightens as the blossoms expand. Corolla funnel-form, nearly white, scarcely longer than the calyx, destitute of appendages. Nutlets tubercled and pitted, gray

and dull. Waysides and old fields; common. Near reservoir, Nashville. Fl. April. The whole plant. Since a long time obsolete, but very recently again becoming a popular remedy in chronic catarrh of the bladder.

BORRAGINACEÆ. (Borage Family.)

Cynoglossum officinale, L. Hound's-Tongue. Coarse herb with a strong scent, clothed with short, soft hairs, leafy, panicled above, lower leaves petioled, upper lanceolate, closely sessile, by a rounded or slightly heart-shaped base; racemes nearly bractless; corolla reddish-purple, rarely white, funnel-form, the tube about equaling the 5-parted calyx, and throat closed with 5 obtuse scales; lobes rounded. Stamens included. Nutlets flat on the broad upper face, oblique fixed near the apex to the base of the style, roughened all over with short, barbed and hooked prickles. Naturalized from Europe, but frequent on waste grounds. The leaves are officinal.

Onosmodium Carolinianum, DC. False Gromwell. Coarse and hispid perennial herb with oblong and sessile, ribbed-veined leaves and white flowers in at length elongated and erect leafy, raceme-like clusters. Before and at the time of flowering it has an appressed shaggy pubescence or softly-strigose canescence. Stem upright 2-3° high; leaves ovate-lanceolate, or oblong-lanceolate, acute. Calyx 5-parted, the divisions linear and erect. Corolla tubular, not crested (the sinuses minutely hooded-inflexed); lobes of the rather broad corolla ovate-3-angular or 3-angular lanceolate, thickish hirsute outside. Possesses the same qualities as O. Virginianum, DC., which is very much like it. The root is collected.

Symphytum officinale, Tourn. Comfrey. A coarse branched plant with a thick rootstock, a stem strongly winged by the decurrent bases of the leaves, and yellowish white corolla. The lower leaves ovate-lanceolate, tapering into a petiole, the upper narrower. Corolla oblong-tubular, inflated above, 5-toothed, the short teeth spreading; the throat closed with 5

converging linear-awl-shaped scales. Stamens included; anthers elongated. Style thread-form. Nutlets smooth, ovate, erect, fixed by the large hollowed base, which is finely-toothed on its margin. Found in the old settlements in East Tennessee, where it was formerly cultivated in gardens, and escaped into old fields and moist places. Fl. June. The root is collected in fall.

CONVOLVULACEÆ. Convolvulus Family.)

Ipomœa pandurata, Meyer. Wild Potato-vine. Man-root. A widely trailing and twining perennial. The long and stout stems form a huge root, which sometimes weighs 10–20 pounds. Leaves cordate, acuminate, glabrous, sometimes contracted so on the sides as to be fiddle-shaped; peduncles longer than the petioles, 1–5 flowered. Calyx not bracteate at base, but the outer sepals commonly larger; corolla open funnel-form 3′ long, contorted in the bud, white with purple in the tube; stamens not exserted; stigma 2-lobed or entire. Capsule globular, cells 2, each 2-seeded. Common along river banks, railroad embankments and on dry, open ground. Fl. June–August. The root is collected.

SOLANACEÆ. Nightshade Family.)

Solanum Dulcamara, L. Bittersweet. Woody Nightshade. A climbing perennial, or scrambling over hedges, more or less pubescent; leaves ovate-heart-shaped, the upper halbert-shaped, or with two ear-like lobes or leaflets at base. Calyx and wheel-shaped corolla 5-parted, the latter plaited in the bud, and valvate or induplicate. Stamens exerted; filaments very short; anthers converging round the style, opening at the tip by two pores or chinks. Flower purple, in small cymes, berries oval, red. Fl. June–September. The leaves, in flowering season.

Solanum nigrum, L. Common Nightshade. An ubiquitous weed. Low, much branched and often spreading, nearly glabrous, rough on the angles; leaves ovate, wavy-toothed; flowers white, in small umbel-like lateral clusters, drooping; calyx

spreading; filaments hairy, berries globular, black. Form of flower very much like the former, but smaller. The herb, at any time.

Solanum Carolinense, L. HORSE-NETTLE. A prickly rough herbaceous perennial, hirsute or roughish-pubescent; hairs stellate with 4–8-rayed hairs; prickles stout, yellowish; leaves oblong or ovate, obtusely sinuate-toothed or lobed, or sinuate-pinnatifid; racemes simple, soon lateral; calyx-lobes acuminate; berries about 6″ broad. Waste places, everywhere. Fl. May–July. Collect the berries.

Datura Stramonium, L. THORN APPLE. Annual, glabrous; leaves ovate, sinuate-toothed or angled; stem green. Calyx prismatic, 5-toothed; separating transversely across the base in fruit, the upper part falling away. Corolla funnel-form, with a large and spreading, 5-10 toothed plaited border. Stigma 2-lipped. Capsule globular, prickly, 4-valved, 2-celled, with two thick placentæ projected from the axis into the middle of the cells, and connected with the walls by an imperfect false partition, so that the capsule is 4-celled except near the top, the placentæ as if on the middle of the false partition. Seeds large, flat. A well-known fœtid, poisonous weed. Seeds and foliage are used. Fl. June–September.

Datura Tatula, L. PURPLE THORN APPLE. Jamestown weed. In all parts very near like the former, but taller; stem purple; corolla pale violet-purple; prickles of the capsule nearly equal. Waste grounds, with the former, collected in the same way. Most abundant.

SCROPHULARIACEÆ. (FIGWORT FAMILY.)

Verbascum Thapsus, L. COMMON MULLEIN. A tall and robust biennial herb with alternate leaves, densely woolly throughout; stem tall and stout, winged by the decurrent bases of the oblong acute leaves. Calyx 5-parted, corolla 5-lobed, open or concave, wheel-shaped; the lobes broad and rounded, a little unequal. Stamens 5; lower filaments usually beard-

less. Flowers yellow, in a prolonged and very dense cylindrical spike. Fields and fallow grounds, a very common plant. Leaves and flowers are collected separately.

Linaria vulgaris, Mill. BUTTER AND EGGS. Erect, glabrous perennial, with linear extremely numerous pale leaves; raceme dense, terminal. Calyx 5-parted. Corolla personate, with prominent palate, 1′ long or more, including the slender subulate spur. Stamens 4. Capsule thin, opening below the summit by a pore. Seed winged. Scatteringly through the territory along fences and roadsides. Sometimes becoming a troublesome weed in cultivated grounds. The herb.

Chelone glabra, L. TURTLE-HEAD; BALMONY. Smooth, perennial with upright branching stems 2–6° high. Leaves narrowly to rather broadly lanceolate 4–5′ long, 4–12″ wide, gradually acuminate, serrate with sharp appressed teeth, narrowed at base usually into a very short petiole; bracts not ciliate, corolla white or barely tinged with rose; inflated tubular with the month a little open; upper lip broad and arched, keeled in the middle, notched at the apex, the lower woolly-bearded in the throat, 3-lobed at the apex, the middle lob smallest. Stamens 4 with wolly, heart-shaped anthers, and a fifth sterile filament smaller than the others. Seeds many, wing-margined. In wet places over the State. Fl. August-September. The leaves are collected in flowering season.

Scrophularia nodosa, L., **var. Marilandica**, Gray. FIGWORT. Rank herb with opposite, ovate or oblong leaves or the upper lanceolate, acuminate, cut-serrate, rounded or rarely heart-shaped at the base, stem 4-sided. Calyx deeply 5-cleft. Corolla with a somewhat globular tube; the 4 upper lobes of the short border erect (the two upper longer), the lower spreading. Stamens 4, declined, with the anther-cells transverse and confluent into one; the fifth stamen a scale-like rudiment at the summit of the tube of the corolla. Capsule many-seeded. Collect leaves and tops. Fl. June-July. In low damp ground, common.

Veronica Virginica, L. **Leptandra Virginica**, Michx. CULVERS ROOT. Tall perennial, stem simple, 2–6° high, leaves whorled in fours to sevens, short petioled, lanceolate, pointed, finely serrate; spikes panicled; calyx 4-parted; corolla small, sky-blue, the border 4-parted, the lateral lobes or the lower one commonly narrower than the others. Stamens 2, one each side of the upper lobe of the corolla, much exserted; anther-cells confluent at the apex. Style entire, stigma single. Capsule flattened, obtuse or notched at the apex. Fl. July. Mountains and highlands, very copious on the western slope of the Cumberland Mountains. The rhizome, collected in the fall.

OROBANIHACEÆ. (BROOM-RAPE FAMILY.)

Epiphegus Virginicus, Bart. BEECH-DROPS. CANCER-ROOT. Slender, chestnut-colored, parasitic plant, living on the roots of beech-trees, much branched, 6–12′ high, with small scattered scales. Flowers racemous or spiked, scattered on the branches; the upper sterile, whitish or purple, 6–8″ long, curved, 4-toothed, the lower fertile, with a very short corolla, which seldom opens, but is forced off by the base by the growth of the pod; stamens and style very short. Calyx 5-toothed. Stigma capitate, a little bilobed. Capsule 2-valved at the apex, with two approximate placentæ on each valve. Fl. October. Never missing in any region where beeches abound. The whole plant.

BIGNONIACEÆ. (BIGNONIA FAMILY.)

Catalpa bignonioides, Walt. CATALPA. INDIAN BEAN. A low and much branched tree, with thin bark. Leaves ovate and opposite, large, heart-shaped, acuminate. Calyx deeply 2-lipped; corolla bell-shaped, 1½′ long, thickly spotted, limb oblique and lower lobe entire. Fertile stamen 2 or sometimes 4; the one or three others sterile and rudimentary. Capsule long and slender; 6–19′ long; nearly cylindrical, 2-celled, the partitions at right angles to the valves. Seeds winged on each side, the wings cut into a fringe. Fl. June.

This species is found around Nashville, and likely throughout Middle Tennessee. C. spesiosa, Warder, takes its place in East Tennessee. The bark is ou some of the drug lists.

Tecoma radicans, Juss. TRUMPET-CREEPER. Woody climber attaching itself by aerial rootlets. Leaves pinnate; leaflets 9-11, ovate, pointed, toothed; flowers corymbed; calyx bell-shaped, 5-toothed; corolla funnel-form, 5-lobed, a little irregular, orange and scarlet, 2½–3′ long. Stamens 4. Capsule 2-celled, with the partition at right angles to the convex valves; pod 4–5′ long. Seeds transversely winged. Moist soil, on river banks, sometimes horizontally spread over acres of ground. Fl. May–August. The bark.

VERBENACEÆ. (VERVAIN FAMILY.)

Verbena officinalis, L. EUROPEAN VERVAIN. Anuual, glabrous, loosely branched, 1–3° high; leaves pinnatifid or 3-cleft, oblong-lanceolate, sessile, smooth above, the lobes cut and toothed; spikes panicled, filiform; flowers purplish, very small. Calyx tubular, 5-toothed, one of the teeth often shorter than the others. Corolla tubular, often curved, salver-form. Stamens included, the upper pair occasionally without anthers. Fruit splitting into 4 seedlike nutlets. Nearly everywhere about houses and settlements in sandy soil. The herb in flower. July.

Verbena urticæfolia, L. WHITE VERVAIN. Flower-spike aud flowers very much like the former, but more robust and taller, 3–5° high; leaves oval or oblong-ovate, acute, coarsely serrate, petioled; spikes at length much elongated, loosely panicled; flowers very small, white. A homely weed, everywhere along roadsides or opeu grouuds. Collect the root.

Verbena angustifolia, Michx. NARROW-LEAVED VERVAIN. An erect, slender, pale-green perennial, 12–18′ high, often simple; leaves narrowly lanceolate, tapering to the base, sessile, roughish, slightly toothed, spikes few or siugle, the small purple flowers in a dense spike. The fruits crowded, overlapping each other. A common weed along roadsides in the

limestone regions of Middle Tennessee. Fl. May–August. Has locally gained some reputation used in infusion as a remedy in chronic dysentery.

Verbena hastata, L. Blue Vervain. Tall, 4–6° high, leaves lanceolate or oblong-lanceolate, taper-pointed, cut-serrate, petioled, the lower often lobed and sometimes halbert-shaped at base; spikes linear, densely flowered, erect, corymbed or panicled. Fruits crowded, sometimes overlapping each other. Flowers blue. Fl. July. The herb and root. Very common in sandy soils.

Verbena stricta, Vert. Hoary Vervain. Downy, with soft, whitish hairs; erect, simple or branched, 1–2° high; leaves sessile, obovate or oblong, serrate; spikes thick, somewhat clustered, hairy. Flowers rather large, purple. Fl. July. Counties along Mississippi river, in sandy soils. Abundant. The whole plant.

LABIATÆ. (Mint Family.)

Teucrium Canadense, L. American Germander. A downy, grayish-green, herbaceous perennial. Erect, 1–3° high; leaves ovate-lanceolate, serrate, rounded at base, short-petioled, hoary underneath, the floral scarcely longer than the oblique unequally-toothed calyx; whorls about 6-flowered, crowded in a long and simple wand-like spike. Calyx canescent, 5-toothed, the 3 upper lobes very obscure, or the middle one acutish. Corolla with the 4 upper lobes nearly equal, oblong, turned forward, so that there seems to be no upper lip; the lower lobe much larger. Stamens 4-exserted. Fl. June–September. In low, damp ground, along watercourses. Common. The herb; collect in flowering season.

Collinsonia Canadensis, L. Horse-Balm. Stone-root. Stout herbaceous perennial, nearly smooth, 1–2° high, with serrate, pointed and petioled leaves, with loose pannicles of yellowish flowers. Calyx ovate, enlarged and declined in fruit, 2-lipped; upper lip truncate and flattened, 3-toothed, the lower 2-cleft. Corolla elongated, expanded in the throat,

somewhat 2-lipped, the tube with a bearded ring within; the 4 upper lobes nearly equal, but the lower much larger and longer, pendent, toothed or lacerate-fringed. Corolla lemon-yellow, lemon-scented, 5–6″ long. Upper pair of stamens shorter, much exserted, diverging. Rich woodlands, especially in the mountains. Fl. July. The root is collected in fall.

Collinsonia verticillata, Baldw. Smaller than the former. Stem 1° high, leafless and glabrous below, at summit bearing two approximate pairs or a seeming whorl of thin and large 3–7′ long ovate, coarsely serrate and glabrous leaves; peduncle mostly simple and slender, viscid pubescent, supporting a single raceme; bracts minute; lower pedicels often in pairs or threes; calyx teeth all attenuate-subulate; corolla yellowish or purplish. Fl. in May. Hills south of Nashville. To be used in place of former.

Mentha viridis, L. SPEARMINT. Odorous perennial herb, spreading by slender creeping rootstocks, with terminal inflorescence and the densely capitate glomerules all much crowded in the leafless narrow spikes. Glabrous or nearly so; leaves opposite, oblong-lanceolate or oblong, sparcely and sharply serrate; bracts linear-lanceolate and subulate, conspicuous. Corolla 2-labiate didynamous, stamens not declined, similar and nearly equal. Calyx campanulate or short-tubular and 5-lobed. In wet ground around settlements. Originally introduced from Europe and cultivated, but now naturalized and ubiquitous. The herb is collected.

Mentha piperita, L. PEPPERMINT. Closely resembling the former in the more important particulars, but glabrous, very pungent tasted; leaves ovate-oblong to oblong-lanceolate, acute, sharply serrate; spikes interrupted, leafless, narrow, of numerous glomerules, or some in the axils of the upper leaves; flowers distinctly pedicellate; leaves distinctly petioled, stemless, erect. In wet places and in water; escaped from cultivation but fully naturalized and abundant in same situations as the former. Fl. July–September. Collect the herb.

Lycopus Virginicus, L. BUGLE-WEED. Mint-like perennial, growing at the edge of the water, glabrous or somewhat pubescent; stem obtusely angled 6–24′ high, stoloniferous; long filiform runners produced in summer from the base of the stem, often tuberiferous at their apex. Leaves ovate or oblong-lanceolate, coarsely serrate in the middle, acuminate at both ends, tapering into a short petiole. Calyx campanulate, naked in the throat, teeth 4, sometimes 5, ovate or lanceolate-ovate; upper lobe of corolla entire. Nutlets 3-sided, truncate at top, narrow at base, thickened-margined. The herb is bitter, only slightly aromatic. Fl. June–July. The herb is collected.

Cunila Mariana, L. DITTANY. Delicate low perennial 8–12′ high, fragrant. Stems tufted, corymbosely much branched; leaves smooth, ovate, serrate, rounded or heart-shaped at base, nearly sessile, dotted, 1′ long; cymes peduncled. Calyx ovate, tubular, equally 5-toothed, very hairy in the throat, striate. Corolla 2-lipped; upper lip erect, flattish, mostly notched; the lower 3-cleft. Stamens 2, erect exserted, distinct; sterile filaments short, minute. Flowers white or purplish. In sandy, siliceous soils or magnesian limestone, not in limestone regions. Abundant, especially in East Tennessee. July-September. The herb.

Pycnanthemum linifolium, Pursh. MOUNTAIN MINT. VIRGINIA THYME. Perennial upright herb, with a pungent, mint-like flavor, corymbosely branched above; the many-flowered whorls dense, crowded with bracts forming terminal heads or close cymes. Leaves linear, smoothish, nearly sessile, entire, very numerous. Capitate glomerules small and numerous. Calyx ovate-oblong, about 1-nerved, equally 5-toothed, naked in the throat. The narrow bracts and lance-awl-shaped calyx-teeth pungently pointed. Corolla short, more or less 2-lipped; the upper lip straight, nearly flat, entire or slightly notched; the lower 3-cleft, its lobes all ovate and obtuse. Stamens 4, distant, the lower pair rather longer; anther-cells parallel. Corolla whitish, the lips dotted with purple. Up-

lands in dry soils and again in damp localities. Abounds in the oak-barrens. Fl. June–July. Collect while flowering.

Pycnanthemum incanum, Michx. WILD BASIL. Leaves ovate-oblong, acute, remotely toothed, downy above and mostly hoary with whitish wool underneath; the uppermost whitened both sides; cymes open, bracts linear and awl-shaped, and, with the calyx teeth, more or less awn-pointed. Calyx 2-labiate (3 upper teeth united), the teeth and the tips of the loose bracts not rigid; flowers in dense, flattened, glomerate cymes. Damp woods. Used for distillation of an ethereal oil. The leaves and tops are used.

Pycnanthemum montanum, Michx. MOUNTAIN MINT. Stem 1–3° high; ovate or oblong-lanceolate, serrate leaves glabrous; bracts very acute and awl-pointed, the outermost ovate and leaf-like, the inner linear. Calyx equally 5-toothed, teeth short and acute. Heads few, large and globose (terminal, and in the upper axils of thin, petioled leaves); bracts loose, ciliate-bearded. Fl. July. Used like the former. Only in the higher mountains of East Tennessee, on the borders of North Carolina, Clingman-Dom., Frog Mountains.

Melissa officinalis, L. BALM. Upright, branching, lemon-scented perennial; leaves broadly ovate, crenate-toothed. Corolla with a recurved, ascending tube; calyx with the upper lip flattened, and 3-toothed, the lower two-cleft. Stamens 4, curved and conniving under the upper lip. Clusters few-flowered, loose, one-sided, with few and mostly ovate bracts, resembling the leaves. An excellent honey-plant, deriving its name from "melissa" (Greek), the bee. Frequently cultivated in gardens. Hardly deserving mention here, as it is not prone to spread. Fl. June. The leaves and tops are used for distillation.

Hedeoma pulegioides, Pers. AMERICAN PENNYROYAL. Low, odorous annual, with small leaves and loose axillary clusters of bluish flowers, often forming terminal, leafy racemes. Erect, branching, hairy; leaves oblong-ovate, petioled, some-

what serrate. Calyx ovoid or tubular, gibbous on the lower side, near the base, 12-nerved, bearded in the throat, 2-lipped, upper lip 3-toothed, the lower 2-cleft. Corolla 2-lipped; upper lip erect, flat, notched at the apex, the lower spreading, 2-cleft, scarcely exserted, 2–3″ long. Fertile stamens 2, the upper pair reduced to sterile filaments. (The true pennyroyal is Mentha Pulegium of Europe.) Fl. in summer. Exceedingly frequent in dry, silicious soils. Collect in flower for distillation.

Monarda didyma, L. Oswego Tea. Bee Balm. Herbaceous perennial, somewhat hairy, 2° high, acutely 4-angled; leaves petioled, ovate-lanceolate, acuminate, acutely serrate, the floral ones and the large outer bracts fringed with red; calyx smooth, incurved, nearly naked in the throat, calyx-teeth scarcely longer than the width of the tube; corolla smooth, 2′ long, bright red, showy. Stamens and style exserted; heads solitary and terminal. Fl. June–July. High mountains of East Tennessee, in mountain bogs. The leaves and tops are collected in flowering season for the distillation of an ethereal oil—Ol. Monardæ.

Monarda fistulosa, L. Wild Bergamot. Smoothish or downy, 2–5° high; leaves ovate-lanceolate, the uppermost and outer bracts somewhat colored; calyx distinctly curved, very hairy in the throat; corolla 1′ long or more, purple or purplish dotted, smooth or hairy. The variety M. fistulosa, L., Var. mollis, Benth., is the prevailing and abundantly present form. Corolla flesh-color or lilac, glandular, its upper lip hairy outside or more bearded at the top; leaves paler, soft pubescent beneath; throat of calyx mostly filled with dense beard, with sometimes an outer row of bristles. Fl. August–September. Collected like former.

Monarda punctata, L. Horse-Mint. Perennial, minutely downy, 2–3° high; leaves petioled, lanceolate, narrowed at the base; bracts lanceolate, blunt, obtuse at the base, sessile, yellowish and purple; teeth of the downy calyx short and awnless, rigid, soon spreading; corolla nearly smooth, yel-

lowish, the upper lip spotted with purple, notched at the apex, the tube scarcely exceeding the calyx. Fl. June–July. Prefers sandy soil, and is common along the Mississippi river. Tops and leaves, collected like the former.

Nepeta Cataria, L. CATNIP. Downy, erect, branched perennial, 1–2° high. Leaves heart-shaped, deeply crenate, whitish-downy underneath; calyx tubular, obliquely 5-toothed. Corolla dilated in the throat, 2-lipped; the upper lip erect, rather concaved, notched or 2-cleft, the lower spreading, 3-cleft, the middle lobe longest, either 2-lobed or entire; whitish, dotted with purple. Stamens 4, ascending under the upper lip, the lower pair shorter; anthers approximate in pairs, the cells divergent. Cymose clusters rather dense and many-flowered, forming interrupted spikes or racemes; upper floral leaves small and bractlike. A very common weed around habitations. Fl. July–August. The leaves and tops, before blooming, are collected.

Nepeta Glechoma, Benth. GROUND IVY. Creeping and trailing perennial; leaves petioled, round kidney-shaped, crenate, green both sides, all alike; the axillary clusters loosely few-flowered. In damp, shady ground, everywhere. Fl. April–June. Collect the herb in flowering season.

Scutellaria lateriflora, L. MAD-DOG SKULLCAP. A smooth, slender perennial; stem upright, much branched, 1–2° high; leaves lanceolate-ovate or ovate-oblong, pointed, coarsely serrate, rounded at the base, petioled, 2–3′ long, the lower floral ones similar. Flowers small, 3″ long in axillary and sometimes terminal 1-sided racemes, blue, rarely white. Calyx bell-shaped in flower, 2-lipped, the lips entire, closed in fruit; the upper with a helmet-like at length concave and enlarged appendage on the back; calyx splitting at the base at maturity, the upper lip usually falling away. Corolla with an elongated curved, ascending tube, dilated at the throat, 2-lipped, the upper lip arched, entire or barely notched, the lateral lobes connected with the upper rather than the lower lip; the lower lobe or lip spreading and convex, notched at

the apex. Stamens 4, ascending under the upper lip; anthers approximate in pairs, ciliate or bearded, those of the lower stamens 1-celled, of the upper 2-celled and heart-shaped. Plant bitter, not aromatic. Scatteringly over the whole State; most frequent at the edge of river swamps. Collect in flower.

Brunella vulgaris, L. HEAL-ALL. Low perennial, with nearly simple stems, and 3-flowered clusters of flowers, sessile in the axils of round and bract-like, membranaceous floral leaves imbricated in a close spike or head. Leaves ovate-oblong, entire or toothed, petioled, hairy or smoothish. Calyx tubular, bell-shaped, somewhat 10-nerved and reticulated, veiny, flattened on the upper side, naked in the throat, closed in fruit, 2-lipped; upper lip broad and flat, truncate, with 3 short teeth, the lower 2-cleft. Corolla ascending, slightly contracted at the throat and dilated at the lower side just beneath it, 2-lipped; upper lip erect, arched, entire; the lower reflexed-spreading, 3-cleft, its lateral lobes oblong, the middle one rounded, concave, denticulate. Stamens 4, ascending under the upper lip; filaments 2-toothed at the apex, the lower tooth bearing the anther; anthers approximate in pairs, their cells diverging. Along roadsides and and edges of woodlands, introduced, but now common over the country. Collect the flowering plants. (Eli Lilly's Catalogue.)

Marubium vulgare, L. HOARHOUND. A whitish-woolly, bitter-aromatic perennial, branched at the base. Stems ascending; leaves round-ovate, petioled, crenate-toothed. Flowers in axillary whorls. Calyx with 10 recurved teeth, the alternate ones shorter; corolla with the upper lip erect, notched, the lower spreading, 3-cleft, its middle lobe broadest. Stamens 4, included in the tube of the small white corolla. Over the whole State, especially in the surroundings of habitations. July. Collected before flowering.

Leonurus cardiaca, L. MOTHERWORT. Upright tall perennial; leaves palmately-lobed, long petioled, the lower rounded, the

floral wedge-shaped, at base 3-cleft, the lobes lanceolate. Close whorls of flowers in the axils of the leaves. Calyx top-shaped, 5-nerved, with 5 nearly equal teeth which are awl-shaped and when old rather spiny-pointed and spreading. Upper lip of the corolla oblong and entire, somewhat arched; the lower spreading, 3-lobed, its middle lobe larger, narrowly oblong-obovate, entire, the lateral ones oblong. Stamens 4, ascending under the upper lip; anthers approximate in pairs. Nutlets truncate and sharply 3-angled. Waste places. Fl. July–August. The leaves are collected in flowering season.

PLANTAGINACEÆ. (Plantain Family.)

Plantago major, L. Common Plantain. Herbaceous perennial, leaves all radical and erect spikes of small flowers. Smooth or rather hairy, rarely roughish; leaves strongly ribbed, ribs free to the contracted base, ovate, oblong, oval, or slightly heart-shaped, often toothed, abruptly narrowed into a channeled petiole; spike dense, obtuse. Calyx of 4 imbricated persistent sepals, round-ovate or obovate. Corolla salverform, glabrous, withering on the pod, the border 4-parted; capsule ovoid, circumcissile near the middle, 8–18 seeded; seeds angled, reticulated. Only sparsely found in towns and around dwellings; introduced from Europe, although also indigenous at the northern limit of the United States. The following species is very nearly alike, and undoubtedly a native, extending over the whole country and abundant in this State.

Plantago Rugelii, Decaisne. Leaves as in the last, but paler and thinner; spikes long and thin, attenuate at the apex; sepals oblong, acutely carinate; capsules cylindraceous-oblong, circumcissile much below the middle, 4–9 seeded; seeds oval-oblong, not reticulated. Fl. June–August. The leaves are used.

CHENOPODIACEÆ. (Goosefoot Family.)

Chenopodium Botrys, L. Jerusalem Oak. More or less glandular, pubescent and viscid, aromatic annual, leaves slender-

petioled, oblong, obtuse, sinuate-pinnatifid. Flowers in cymose-diverging racemes, which are loose, leafless, perfect, all bractless. Calyx 3-5 parted, dry in fruit. Stamens 5; filaments filiform. Styles 2. Seeds vertical, lenticular. Fruit not perfectly enclosed. Introduced, but frequently appearing in cultivated grounds. Also frequently cultivated on account of its feathery form and agreeable odor. Fl. in summer. The herb is collected.

Chenopodium ambrosioides, L. var. **anthelminticum**, Gray. WORM-SEED. Smoothish; leaves slightly petioled, oblong or lanceolate, strongly toothed, the lower sometimes almost laciniate-pinnatifid. Spikes more or less elongated, mostly leafless. Fruit perfectly enclosed in the calyx. Fl. July. In waste ground. The seed is used.

PHYTOLACCACEÆ. (POKEWEED FAMILY.)

Phytolacca decandra, L. POKEROOT. POKEBERRY. A smooth, stout, succulent perennial, with a rather unpleasant odor and a very large, poisonous root, often 4–6′ in diameter, sending up stout stalks 6–9° high. Calyx of 5 rounded and petal-like sepals. Stamens and styles 10. Ovary of 5–12 carpels united in a ring, with as many short separate styles, in fruit forming a depressed globose 5-12-celled berry, with a single vertical seed in each cell. Embryo curved in a ring around the albumen. Color of calyx white; ovary green; berries in long racemes, dark purple and filled with crimson juice. Fl. July–September. Fruit matures unequally. Very common in rich soils. The root and the berries are collected separately.

POLYGONACEÆ. (BUCKWHEAT FAMILY.)

Rumex crispus, L. CURLED DOCK. YELLOW DOCK. Smooth, 3–4° high; leaves with strongly wavy-curled margins, lanceolate, acute, the lower truncate or scarcely heart-shaped at base. Flowers perfect or monœciously polygamous; calyx of 6 sepals; the 3 outer herbaceous, sometimes united at base, spreading in fruit; the 3 inner larger, somewhat col-

ored, enlarged after flowering (in fruit called valves), and convergent over the 3-angled achene, veiny, bearing a grain-like tubercle on the bark. Valves round heart-shaped, obscurely denticulate or entire. Stamens 6. Styles 3. Flowers whorled in prolonged, wand-like racemes. Grows in damp places everywhere. Fl. in June. The root is collected in spring.

Rumex altissimus, Wood. GREAT WATER-DOCK. Tall and stout, 5–6° high; leaves oblong-lanceolate, rather acute at both ends, transversely veined, and with obscurely erose-crenulate margins, the lowest, including petiole, 1–2° long; racemes upright in a large compound panicle, nearly leafless; whorl crowded; pedicels capillary, nodding, about twice the length of the fruiting calyx; the valves orbicular or round-ovate, very obtuse, obscurely heart-shaped at base, finely reticulated, entire, or repand denticulate, 2–3″ broad, all grain-bearing. In wet places, edge of pools. June-July. Everywhere. Collect the root.

Rumex obtusifolius, L. BITTER DOCK. Stem roughish; lowest leaves ovate-heart-shaped, obtuse, rather downy on the veins beneath, somewhat wavy-margined, the upper oblong-lanceolate, acute. Whorls loose and distant; valves ovate-halbert-shaped, with some sharp, awl-shaped teeth at base, strongly reticulated, one of them principally grain-bearing. Very common. The root, collected in spring.

Rumex Acetosella, L. SHEEP-SORREL. Low, 8–12′ high; leaves narrowly-lanceolate or linear, halbert-form, at least those of the root, the narrow lobes entire. Flowers diœcious, small, in a terminal naked panicle; pedicels jointed with the flower; valves scarcely enlarging in fruit, ovate, naked. Herbage sour. Roots running. Fl. May. The leaves are used.

Polygonum acre, H. B. K. WATER-SMARTWEED. Perennial, homely weed, nearly smooth; stems rooting at the decumbent base, 3–5° high; leaves 4–6′ long, not jointed on the petiole, taper-pointed. Flowers in dense spikes, with small scarious bracts; spikes erect, flowers whitish, sometimes flesh-

color; stamens 8; style mostly 3-parted; achene smooth and shining. Wet places. One of the vilest weeds. Fl. June. The herb, in a young state.

ARISTOLOCHIACEÆ. (Birthwort Family.)

Asarum Canadense, L. Wild Ginger. Asarabacca. Stemless perennial herb, with aromatic, pungent, creeping rootstocks bearing 2–3 scales, then 1–2 kidney-shaped leaves on long petioles, and short-peduncled flowers, close to the ground in the lower axil. Leaves soft-pubescent, membranaceous, more or less pointed, 4–5′ wide when full grown, unspotted. Calyx regular, 3-cleft, bell-shaped, wholly adnate to the ovary, the upper part of the short-pointed lobes widely and abruptly spreading, brown-purple inside. Stamens 12, slender style, with 6 radiating thick stigmas. Capsule fleshy, globular. In rich soil under shrubs, in shaded moist ground, along creek and river bottoms. The rootstock, collected in fall.

Asarum Virginicum, L. Nearly glabrous; leaves round, heart-shaped, about 2′ wide; persistent, whitish mottled; calyx short, articulated within; calyx-tube inflated, bell-shaped, somewhat contracted in the throat, its base adnate to the lower half of the ovary; limb 3-cleft, short; anthers sessile or nearly so, oblong-linear; styles 6, fleshy, diverging, 2-cleft, bearing a thick extrorse stigma below the cleft. Cumberland Mountains, Lookout Mountains. Fl. May–June. The rhizome.

Asarum arifolium, Michx. Leaves halbert-shaped, 2–4′ long; calyx oblong-tubular, with very short and blunt lobes; anthers obtusely short-pointed. Mountains on the border of North Carolina.

Asarum grandiflorum, Small. Perennial, stout, arising from a more or less branched rhizome, glabrous; leaves varying from broadly-ovate-cordate to orbicular-cordate, 5–9 cm. long, 4–8 cm. broad, obtuse or acutish, long-petioled, mottled or simply green, paler beneath; flowers solitary, large, 1.5–

4 cm. long, tubular-campanulate, limb not contracted but divided into three large, unequal spreading lobes, which are mottled with violet on the inside; peduncle 2–2.5 cm. long; anthers equally 4-ribbed, seed oblique-ovoid, acute, 3.5 mm. long, smooth. (Memoirs of Torry Bot. Club, vol. iv., No. 2, 1894.) Chilhowee and Big Frog Mountains, East Tennessee. A. Canadense, L., is the species originally used by American pharmacists, but all four species here enumerated possess the same acrid, pungent taste and aromatic scent, and would scarcely any way differ therapeutically. The original classical plant is Asarum Europæum, L., which was known and described by Dioscorides. It was much used as an emetic and sternutatory, until superceded by the root of Cephælis Ipecacuanha, a Brazilian Rubiacea. The former is apt to act in small emetic doses, also as a cathartic, while the latter does so only in larger doses, while it acts as an astringent in smaller ones, to the intestinal tract.

Aristolochia Serpentaria, L. VIRGINIA SNAKE-ROOT. A low, twining perennial, stems 8–12′ high, branched at base, pubescent; leaves ovate or oblong from a heart-shaped base or halbert-form, mostly acute or pointed. Flowers all next the root, short-peduncled. Calyx bent like the letter S, enlarged at the two ends, the small limb obtusely 3-lobed. Stamens 6, anthers contiguous in pairs, adnate to the short and fleshy 3–6 lobed or angled style. Capsule naked, septicidally 6-valved. Seeds very flat. The fibrous aromatic root is collected in autumn. Fl. May-June. In rich leaf-mould, in crevices of rocks, especially in the limestone regions of Middle Tennessee; not rare.

LAURACEÆ. (LAUREL FAMILY.)

Sassafras officinale, Nees. SASSAFRAS. Tree 20–100° high. The latter size it attains in the rich alluviums of the Tennessee, Hiwassee and Mississippi Rivers, by a diameter of trunk of 3–4°. The leaves are ovate, entire and sometimes 3-lobed, glabrous; twigs yellowish-green. Flowers diœcious with a

6-parted, spreading calyx; the sterile kind with 9 stamens inserted on the base of the calyx in three rows, the 3 inner with a pair of stalked glands at the base of each; anthers 4-celled, 4-valved; fertile flowers with 6 short rudiments of stamens and an ovoid ovary. Drupe ovoid, blue, supported on a club-shaped and rather fleshy reddish pedicel. Flowers greenish-yellow, naked, in clustered and peduncled racemes, appearing with the leaves, involucrate with scaly bracts. Fl. April. The bark of the root, as well as the chipped wood of same, are used as a tea, etc. From young stems an ethereal oil is distilled. Oleum Sassafras.

Lindera Benzoin, Blume. ALLSPICE. Shrubs, 6–15′ high, leaves deciduous, nearly smooth, oblong-obovate, pale underneath. Flowers polygamous-diœcious with a 6-parted open calyx; the sterile with 9 stamens in 3 rows, fertile flowers with 15–18 rudiments of stamens and a globular ovary. Drupe obovoid, red, the stalk not thickened. The honey-yellow flowers, in almost sessile lateral umbel-like clusters, appearing before the leaves, surrounded by an involucre of 4 deciduous scales. Fl. March. Damp woods, frequent along the river bank at Nashville. The bark, berries and leaves are collected separately.

LORANTHACEÆ. (MISTLETOE FAMILY.)

Phoradendron flavescens, Nutt. AMERICAN MISTLETOE. Yellowish-green woody parasite, living on the branches of oaks, cratægus, elms, etc., having jointed, much branched stems, firm persistent leaves and axillary, small spikes of flowers. Flowers diœcious, usually several to each short fleshy bract and sunk in the joint. Calyx globular, 3–4-lobed; in the staminate flowers a sessile anther is borne on the base of each lobe, transversely 2–celled, each cell opening by a pore or split; in the fertile flowers the calyx–tube adheres to the ovary; stigma sessile, obtuse. Berry 1-seeded, white, pulpy. Leaves obovate or oval, somewhat petioled, longer than the the spikes. Eli Lilly & Co. Plant and berries.

PIPERACEÆ (Pepper Family.)

Saururus cernuus, L. Lizzard's Tail. Perennial marsh herb, with heart-shaped, converging-ribbed, petioled leaves, without distinct stipules. Flowers crowded in a slender, wand-like and naked-peduncled terminal spike, white, fragrant. Spike nodding at the end. Stamens 6–7, with long capillary filaments. Destitute of floral envelopes; 3–5 indehiscent carpels united to a somewhat fleshy fruit. Fl. July–August. Very abundant in stagnant waters. U. S. Ph. The herb.

EUPHORBIACEÆ. (Spurge Family.)

Euphorbia hypericifolia, Grey, Man. E. Preslii, Guss. Decumbent, ascending or erect annual, smooth or with scattered hairs; leaves opposite, oblique at the obtuse or slightly cordate base, ovate oblong, sometimes falcate, serrate $\frac{1}{2}$–$1\frac{1}{2}'$ long, often with a red spot or red margins; stipules 3-angular; peduncles longer than the petioles, collected in loose leafy terminal cymes. Appendages entire. Flowers monœcious, included in a cup-shaped 4–5-lobed involucre resembling a calyx or corolla, bearing large thick glands with petal-like margins at sinuses. Sterile flowers numerous and lining the base of the involucre, each from the axil of a little bract, and consisting merely of a single stamen jointed on a pedicel like the filament; anther-cells globular, separate. Fertile flower solitary in the middle of the involucre, soon protruded on a long pedicel, consisting of a 3-lobed and 3-celled ovary with no calyx or mere vestige. Styles 3, each 2-cleft, the stigmas 6. Pod separating into 3, 1-seeded capsules, which split elastically into 2 valves. In cornfields, covering the whole surface. U. S. Ph. The herb.

Euphorbia corollata, L. Large Flowering Spurge. Erect perennial, with entire leaves equal at base; only the uppermost leaves whorled or opposite, glabrous, lanceolate or linear, entire, obtuse. Stipules none. Involucres 5-lobed, in the forks of the branches, and terminal; long peduncled, with showy white appendages (appearing like petals), the

lobes minute and incurved; pod slender-pedicelled, smooth. Fl. July. In sandy soil. The horizontally creeping root is collected.

Stillingia sylvatica, L. QUEEN'S DELIGHT. Herbaceous perennial, 1–3° high, with almost sessile, oblong-lanceolate, serrulate leaves. Flowers monœcious, aggregated in a terminal spike. Petals and glands of the disk, none. Calyx 2–3 cleft or parted; the divisions imbricated in the bud. Stamens 2–3; anthers adnate, turned outward. Style thick; stigmas 3, diverging, simple. Capsule 3-celled, 3-lobed, 3-seeded. Sandy soils, along the Mississippi river, Memphis. Fl. June–July. Collect in spring.

URTICACEÆ. (NETTLE FAMILY.)

Ulmus fulva, Michx. SLIPPERY OR RED ELM. A small or middle-sized tree, 40–50° high, with tough reddish wood and a very mucilaginous inner bark. Buds before expansion soft-downy, with rusty hairs; leaves ovate-oblong, taper-pointed, doubly serrate, 4–8′ long, sweet-scented in drying, soft-downy beneath, or slightly rough downward; branchlets downy. Calyx bell-shaped, 5–9 cleft.. Stamens 5–9, on long slender filaments; styles 2, short, diverging, stigmatic along the inner edge. Fruit a 1-celled and 1-seeded samara, winged all around, 8–9″ wide, pubescent. Along water-courses, in rich woods. Fl. March. The inner bark is used.

Cannabis sativa, L. HEMP. A tall, roughish annual, 6–8° high. Flowers diœcious; the sterile in axillary compound racemes or panicles, with 5 sepals and 5 drooping stamens. Fertile flowers, spiked-clustered, 1-bracted; the calyx of a single sepal, enlarging at the base and folded around the ovary. Achenes crustaceous. Leaves digitate, of 5–7 linear-lanceolate, coarsely-toothed leaflets, the upper alternate. The inner bark of very tough fibres. Escaping into waste ground, but not spreading. The flower-tops and the seeds.

Humulus Lupulus, L. HOP. A twining rough perennial having

opposite, heart-shaped and palmately 3–7 lobed leaves, with persistent ovate stipules between the petioles. Flowers dicœcious; the sterile in loose axillary panicles, with 5 sepals and 5 ereet stamens. Fertile flowers in short axillary and solitary spikes or catkins; braets foliaceous, imbrieate, each 2-flowered, in fruit forming a sort of membranaceous strobile. Calyx of a single sepal, embraeing the ovary. Achene invested, with the enlarged scale-like calyx. The strobile sprinkled with yellow resinous grains, which give the bitterness and aroma to the hop (Lupuline). Found on deserted homesteads and abandoned garden plots, apparently only, wild. It does not seem to produce fertilized seed in this latitude. The strobiles are collected.

Morus rubra, L. Red Mulberry. An indigenous species, making a large tree, which ripens its blackberry-like fruit in June. Leaves heart-ovate, serrate, rough above, downy beneath, pointed, sometimes lobed. Flowers monœeious, sometimes dicœcious; the two kinds in separate axillary and catkin-like spikes. Calyx 4-parted; stamens 4; ovary 2-celled, one of the cells smaller and disappearing; styles 2. Achenes ovate, eompressed, eovered by the suceulent berry-like calyx, the whole spike thus beeoming a thiekened oblong and juicy edible, aggregate fruit. Fl. May. In bottom lands over the State. The fruit is used for syrups, etc., in place of the European M. nigra, L.

Urtica dioica, L. The Common Nettle. A very bristly and stinging perennial herb making no elaim for beauty. The leaves are ovate, heart-shaped, pointed, very deeply serrate, downy beneath as well as the upper part of the stem. Flower-clusters in branching panieled spikes. Sterile flowers: sepals 4. Stamens 4, inserted around the cup-shaped rudiment of a pistil. Fertile flowers; sepals 4 in pairs, the 2 outer smaller and spreading, the 2 inner flat or concave, in fruit membranaceous and enclosing the straight and erect ovate flattened achene. Flowers greenish, May–June. Running the hand from the root upward, no damage is sustained, but the slightest touch downward is severely punished. The

root is used for a fluid extract. Now and then introduced with foreign goods, and found about rubbish, but not capable of continuous self-propagation in this latitude.

Maclura aurantiaca, Lindl. THE OSAGE ORANGE. A shrub or tree, is mentioned in the U. S. Pharmacopœia, but as the root of the bark is only used for a yellow dye, it deserves no further consideration.

JUGLANDACEÆ. (WALNUT FAMILY.)

Juglans cinerea, L. WHITE WALNUT. BUTTERNUT. A tree 50–75° high with gray bark, widely spreading branches, and lighter brown wood than the next. Leaves odd-pinnate, 5–8 pairs, oblong-lanceolate, serrate, pointed, rounded at base, downy, especially beneath, the petioles and branches downy with clammy hairs. Flowers monœcious, the sterile in catkins, with an irregular calyx adnate to the bract; the fertile solitary or several together on a peduncle at the end of the branches, with 4–5-toothed calyx, bearing 4 small petals at the sinuses. Styles 2, very short; stigmas 2, somewhat club-shaped and fringed; fruit oblong, clammy, pointed, the nut deeply sculptured and rough with ragged ridges. Fl. May. In bottom lands, along water-courses. The inner bark of the root is preferred.

Juglans nigra, L. BLACK WALNUT. Leaflets 7–11 pairs, ovate-lanceolate, taper-pointed, somewhat heart-shaped or unequal at base, smooth above, the lower surface and the petioles minutely downy; fruit spherical, roughly dotted, the nut corrugated, 4-celled at top and bottom. A larger tree than the foregoing, often over 100° high, with rough brown bark and purplish brown wood. The finest specimens have been in the rich mountain coves of the Smokies, where I saw trees upward of 100° high, with straight boles 3° in diameter! The bark is used, and the nut yields a fine desicating oil, used by artists in oil paintings.

Carya alba, Nutt. SHELLBARK HICKORY. Large tree, 70–100° high, giving very valuable timber. Bark of trunk shaggy, exfoliating in rough strips or plates; bud-scales becoming

large and conspicuous, persistent until the flowers are fully developed. Leaves unequally pinnate; 5–7, finely serrate, the 3 upper ovate or lanceolate, the lower pair much smaller and oblong-lanceolate, all taper-pointed; fruit globular or depressed; nut white, flattish-globular, barely mucronate; the shell thinnish. Sterile catkins fascicled from separate lateral scaly buds near the summit of shoots of the preceding year. Stamens 3–10. Fertile flowers 2–5 in a cluster or short spike, on a peduncle terminating the shoot of the season; calyx 4-toothed, petals none. Fl. April.

Carya sulcata, Nutt. Big Shell-bark. Bark as in the former. Leaflets, 7–9 more downy underneath; fruit oval or ovate, 4-ribbed above the middle, the husk very thick; nut large, $1\frac{1}{2}$–2′ long and usually angular, dull white or yellowish, thick-walled, usually strongly pointed at both ends. Fl. May. Rich bottom lands.

Carya tomentosa, Nutt. Mocker-nut. Also large tree, often 100° high. Bark close, rough, but not shaggy and exfoliating on old trunks; catkins, shoots, and lower surface of the leaves tomentose when young, resinous-scented; leaflets 7–9 lanceolate-obovate, pointed; fruit globular or ovoid, with a very thick and hard husk; nut globular, not compressed, 4-ridged toward the slightly pointed summit, brownish, very thick, 1′ in diameter or smaller. Over the State. The inner bark and the nuts are used.

CUPULIFERÆ. (Oak Family.)

Betula lenta, L. Sweet or Black Birch. Large tree with dark brown bark which is close, not pealing, sweet-aromatic. Leaves straight-veined, ovate or oblong-ovate from a more or less heart-shaped base, accuminate, sharply and finely doubly serrate all round, when mature shining or bright green above and glabrous except on the veins beneath. Flowers in scaly catkins; sterile flowers 3 and bractlets 2 to each shield-shaped scale or bract of the catkins, consisting of a calyx of one scale, bearing 4 short filaments with 1-celled

anthers. Fertile flowers 2–3 to each 3-lobed bract, without bractlets or calyx, each of a naked ovary, becoming a broadly-winged and scale-like nutlet, crowned with the two spreading stigmas; fruiting catkins oblong-cylindrical. The bark is used. The higher Cumberland and Alleghanies. Fl. April.

Alnus serrulata, Willd. SMOOTH ALDER. Shrub or sometimes a small tree. Leaves ovate, acute at the base, sharply serrate, with minute teeth, thickish, green both sides, smooth or often downy beneath. Flowers developed in earliest spring, before the leaves, from mostly clustered catkins, which were formed the foregoing summer and have remained naked over winter; sterile catkins elongated and drooping. Fertile catkins ovoid or oblong; the fleshy scales each 2–3 flowered with a calyx of 4 little scales adherent to the scales or bracts of the catkin, which are thick and woody in fruit, wedge-obovate, truncate, or 3–5 lobed, persistent. Fl. April. Along creeks or springs over the whole State. The bark is used.

Corylus rostrata, Ait. BEAKED HAZEL-NUT. A low shrub, 2–3° high. Leaves ovate or ovate-oblong, somewhat heart-shaped, pointed; sterile flowers in drooping cylindrical catkins, consisting of 8 stamens with 1-celled anthers, their short filaments and pair of scaly bractlets cohering more or less with the inner face of the scale of the catkin. Fertile flowers several, in a scaly bud, each a single ovary in the axil of a scale or bract and accompanied by a pair of lateral bractlets; ovary tipped with a short limb of the adherent calyx, incompletely 2-celled with 2 pendulous ovules, one of them sterile. Involucre of united bracts much prolonged above the nut into a narrow, tubular beak, which is densely beset with short bristly hairs. Those hairs or spiculæ are used as an effective anthelmintic, equally efficacious and harmless as cowhage (Dolichos pruriens.)

Quercus alba, L. WHITE-OAK. Large tree with pale and often scaly bark. Mature leaves, smooth, pale or glaucus underneath, bright green above, obovate-oblong, obliquely cut

into 3–9 oblong or linear and obtuse, mostly entire lobes. Sterile flowers slender, in naked catkins; bracts caducous; calyx 2–8 parted, stamens 6–8. Fertile flowers scattered, consisting of a 3-celled and 6-ovuled ovary with a 3-lobed stigma, enclosed by a scaly bract-like involucre, which becomes an indurated cup around the base of the rounded nut or acorn. Cup hemispherical, saucer-shaped, tubercled at maturity, naked, much shorter than the ovoid or oblong acorn (1′ long). Fruit maturing the first year. The bark.

Quercus rubra, L. Red Oak. Leaves rather thin, turning dark red after frost, moderately pinnatifid, the lobes acuminate from a broad base, with a few coarse teeth. Bark of trunk dark gray, smoothish. Cup saucer-shaped or flat, with a narrow raised border 9–12″ diameter, of fine, closely appressed scales, sessile on a very short and abrupt, narrow stalk or neck, very much shorter than the ovate-oblong or elliptical acorn, which is 1′ or less in length. In rich or poor soil. Timber coarse and poor. Fl. May. The bark is used.

Quercus coccinea, Wang., var. **tinctoria**, Gray. Black Oak. Quercitron. Leaves with undivided lobes commonly pale and somewhat pubescent beneath, turning brownish, orange or dull red in autumn. Cup top-shaped, with a conical base 7–9″ broad; cup-scales large and loosely imbricated, yellowish, gray, pubescent, covering half or more of the globular-ovoid acorn. Fl. April–May. With the former. The bark. This and the above mature the fruit in the second year.

Castanea sativa, Mill., var. **Americana**, Gray. Chestnut. A large tree; leaves oblong-lanceolate, pointed, serrate, with coarse pointed teeth, acute at base, when matured smooth and green both sides. Sterile flowers, interruptedly clustered in long and naked cylindrical catkins. Calyx mostly 6-parted; stamens 8–20; filaments slender; anthers 2-celled. Fertile flowers few, usually three together in an ovoid, scaly, prickly involucre; calyx with 6-lobed border crowning the 3–7-celled, 6–14-valved ovary; abortive stamens 5–

12; styles linear, exserted, as many as the cells of the ovary; stigmas small. Nuts coriaceous, ovoid, enclosed 2–3 together, or solitary in the hard and thick very prickly 4-valved involucre. Flowers appearing later than the leaves, cream color. Fl. June. In sandy or argillaceous soils, not in limestone. The foliage is collected late in summer.

Fagus ferruginea, Ait. AMERICAN BEECH. Tree 75–100° high, with a close and smooth ash-gray bark, a light horizontal spray, and undivided, strongly straight-veined leaves, which are open and convex in the tapering bud and plaited on the veins. Leaves oblong-ovate, taper-pointed, distinctly and often coarsely pointed. Sterile flowers in small heads on drooping peduncles, with deciduous scale-like bracts; calyx bell-shaped, 5–7 cleft; stamens 8–16, filaments slender, anthers 2-celled. Fertile flowers, usually in pairs at the apex of a short peduncle, invested by numerous awl-shaped bractlets, the inner coherent at base to form the 4-lobed involucre; calyx-lobes 6, awl-shaped, ovary 3-celled, styles 8. Nuts sharply 3-sided, usually two in each urn-shaped and soft-prickly coriaceous involucre, which divides to below the middle into 4 valves. In rich, heavy soils. Fl. May. The bark and leaves are used.

SALICACEÆ. (WILLOW FAMILY.)

Salix alba, L. WHITE WILLOW. A tree of rapid growth, attaining a height of 50–80°. Dicœcious, with both kinds of flowers in catkins, one to each bract without perianth. Bracts of the catkins entire; aments borne on short lateral leafy branchlets; scales yellowish, falling before the capsules mature. Stamens 2; capsules subsessile, ovate-conical; leaves lanceolate, long-acuminate. Very common in wet, low grounds. The bark is used.

Salix nigra, Marsh. BLACK WILLOW. Shrub or small tree. Leaves narrowly lanceolate, very long-attenuate from near the roundish or acute base to the usually curved tip, often downy when young, at length green and glabrous, except the petiole and midrib; stipules large, semicordate, pointed

and persistent, or small, ovoid and deciduous; fruiting aments $1\frac{1}{2}$–3′ long, more or less dense; capsules ovate-conical, shortly pedicelled. Common along creeks and rivers. The var. Wardi Bebb at Nashville. The bark.

Populus balsamifera, L. var. **candicans**, Gray. BALM OF GILEAD. Tree 30–50° high, the large buds varnished with a copious fragrant resin; leaves ovate-lanceolate, more or less heart-shaped, gradually tapering and pointed, finely crenate, smooth on both sides, whitish and reticulately veined beneath, on terete, hairy petioles. Stamens 20–30; styles 2–4 with dilated lobes, capsule ovate, 2-valved. Common in cultivation and utilized in domestic practice in preparation of an ointment. The buds are collected.

SUBCLASS II. GYMNOSPERMÆ.

CONIFERÆ. (PINE FAMILY.)

Pinus Tæda, L. LOBLOLLY OR OLD-FIELD PINE. A tree 50–150° high; leaves 6–10′ long, in two's or three's in the elongated sheets, light green. Sterile flower involucrate by a number of scales, consisting of numerous stamens spirally inserted on the axis, with very short filaments and a scale-like connective; anther-cells 2, opening lengthwise. Pollen of 3 united cells. Fertile catkins solitary or aggregated immediately below the terminal bud, or lateral on the young shoot, consisting of imbricated carpellary scales, each in the axil of a persistent bract, bearing a pair of inverted ovules at the base. Fruit a cone formed of the imbricated woody capillary scales, which are thickened at the apex, persistent, spreading when ripe and dry; the 2 nut-like seeds partly sunk in excavations at the base of the scale, in separating carrying away a part of its lining as a thin fragile wing. Cones elongated-oblong, 3–5′ long and tapering; scales tipped with a stout, incurved spine. The bark is utilized. The exuding resin, turpentine, is used by itself or yields the oil or spirits of turpentine by distillation. Common in sandy soil, especially in the southeastern part of the State.

Tsuga Canadensis, Carr. HEMLOCK. A tall tree with light and spreading spray and delicate foliage, bright green above and silvery beneath. Leaves petioled, short-linear, obtuse 1½′ long, sattered, flat, appearing 2-ranked. Fertile catkins and cone on the end of last year's branchlets; cones oval, 6–8″ long of few thin scales, much longer than the bracts, maturing the first year. Cumberland Mountains and mountains of East Tennessee. The prepared resinous exudation. Pix Canadensis U. S. Ph. The bark, Hemlock bark. The volatile oil obtained by distillation of the twigs gives the oil of Hemlock.

Juniperus Virginiana, L. RED CEDAR. Growing to a height of 60–90°, pyramidal in form; evergreen leaves mostly opposite, of two forms, i. e., awl-shaped and loose, and scale-shaped, appressed, imbricated and crowded, the latter with a resiniferous gland on the back; scale-like leaves obtuse or acutish, entire. Flowers dioecious or occasionally monœcious, in very small lateral catkins. Anther-cells 3–6, attached to the lower edge of the shield-shaped scale. Fertile catkins ovoid, of 3–6 fleshy, coalescent scales, each 1-ovuled in fruit forming a sort of berry, which is scaly bracted underneath, bluish-black with white bloom. Very frequent in Middle Tennessee, where the cedars form nearly exclusive forests or stands, in the silurian limestone region, known as cedar-glades. A volatile oil is obtained by distillation of tops. Oleum Juniperi Virginianæ, oil of Red Cedar.

CLASS II. MONOCOTYLEDONOUS OR EXOGENOUS PLANTS.

ORCHIDACEÆ. (ORCHIS FAMILY).

Corallorhiza odontorhiza, Haller. CORAL-ROOT. A light brown or purplish plant; stem slender, bulbous-thickened at the base, 6–16′ high, 6–20 flowered. Flower irregular, somewhat ringent, oblique and gibbous, small spur adnate to the summit of the ovary. Perianth about 3″ long; lip entire or merely denticulate, thin, broadly ovate or obovate, ab-

ruptly contracted into a claw-like base; the lamellæ a pair of short projections. The branched and toothed, coral-like rootstock is used. Fl. May–June. Collect in July.

Goodyera pubescens, R. Br. NET-LEAF PLANTAIN. A tender perennial with strongly white-reticulated leaves, and numerous crowded flowers on a scape 6–12′ high. Flower irregular; tip of the globular lip very short; gland-bearing beak of the stigma very short. Root of thick fibres, from a somewhat fleshy, creeping rootstock. Mountains of East Tennessee. Frequent. Collect in autumn. Eli Lilly's Catalogue.

Cypripedium pubescens, Willd. LARGER YELLOW LADY'S-SLIPPER. Showy plant, stem 2° high, pubescent, as are also the broadly oval acute leaves. Two of the sepals united into one under the lip, sepals elongated-lanceolate; lip flattened laterally, very convex and gibbous above, 1½–2′ long, pale yellow. Stem leafy to the top, 1–3 flowered. Rich soil in the woods of Middle and East Tennessee. Fl. May. The rhizome is used.

Cypripedium parviflorum, Salisb. SMALLER YELLOW LADY'S-SLIPPER. Stem 1–2° high; leaves oval, pointed; sepals ovate or ovate lanceolate; lip flattish from above, bright yellow, 1′ long or less; sterile stamen 3-angular. Flower fragrant; sepals and petals brown-purple. Fl. May–June. Throughout the State, but nowhere in large numbers. Hills around Nashville. The rhizome, with rootlets. Collect in autumn.

HÆMODORACEÆ. (BLOODWORT FAMILY.)

Aletris farinosa, L. STAR-GRASS. COLIC-ROOT. Perennial and smooth stemless herb, very bitter, with fibrous roots and and a spreading cluster of thin and flat lanceolate leaves; the small flowers in a wand-like spiked raceme, terminating a naked, slender scape 2–3° high. Perianth cylindrical, wrinkled and roughened outside by thickly-set points, which look like scurfy mealiness, the tube cohering with the base only of the ovary, 6-cleft at the summit. Stamens 6, insert-

ed at the base of the lobes; filaments and anthers short, included. Style awl-shaped, 3-cleft at the apex; stigmas minutely 2-lobed. Capsules ovate, enclosed in the perianth. Fl. May. Very frequent in damp, sandy soil, in the oak-barrens. The root is officinal. Collect in early fall.

IRIDACEÆ. (Iris Family.)

Iris versicolor, L. Blue Flag. Perennial, with sword-shaped leaves, from a creeping, more or less tuberous, rootstock. Stem erect, 1–3° high, angled on one side, leaves $\frac{3}{4}'$ wide. Perianth 6-cleft; tube of the perianth shorter than the divisions, which are beardless and crestless, the erect inner ones much smaller than the outer. Stamens distinct; the oblong or linear anthers sheltered under the over-arching petal-like stigmas. Capsule oblong, turgid, with rounded angles. In lagoons and wet places; common over the State. Fl. May. The rhizome should be collected in fall.

AMARYLLIDACEÆ. (Amaryllis Family.)

Agave Virginica, Rattlesnake-Master. Herbaceous perennial, with more or less entire fleshy leaves clustered at the base of a 3–6° high scape; flowers scattered in a loose wand-like spike, greenish-yellow, fragrant; perianth 9–12″ long, its narrow tube twice longer than the erect lobes. The stout root is used as a domestic remedy in the South for the relief of flatulent colic and dyspepsia. Frequent in calcareous, rocky soils.

DIOSCOREACEÆ. (Yam Family.)

Dioscorea villosa, L. Wild Yam-Root. Herbaceous. Stem slender, from knotty and matted rootstocks, twining over bushes; leaves mostly alternate, sometimes nearly opposite or in fours, more or less downy beneath, heart-shaped, conspicuously pointed, 9–11 ribbed. Flowers diœcious, pale greenish-yellow, small, 6-androus and regular, the sterile in drooping panicles; the perianth adhering in the fertile

flowers to the 3-celled ovary. Capsules 3-celled, 3-winged, 8–10″ long. Fl. June. In thickets, along river banks, frequent. The rhizome is collected in fall.

LILIACEÆ. (Lily Family).

Smilax herbacea, L. Carrion Flower. Herbaceous, stems not prickly, climbing 3-15° high; leaves ovate or rounded, mostly heart-shaped or truncate at base, abruptly acute to short acuminate, 7–9 nerved, smooth; petioles 3–4, long, longer than the leaves. Flowers dicœcious, on axillary peduncles, regular, the perianth segments distinct, deciduous. Filaments linear. Ovary of fertile flowers, 3-celled. Flowers carrion-scented. Berries bluish-black, with a bloom. Very common; abundant around Nashville. The leaves are collected in flowering season.

Smilax bona nox, L. Wild Sarsaparilla. Branches and the angular, often square branchlets sparsely armed with short rigid prickles; leaves varying from round-heart-shaped and slightly contracted above the dilated base to fiddle-shaped and halbert-shaped or 3-lobed, green and shining both sides, cuspidate-pointed, the margins often somewhat bristly-cilicate or spinulate; leaves tardily deciduous or partly persistent. Peduncle longer than, but seldom twice the length of, the short petiole, flattened; berries black with a bloom. Root not tuberous. In damp ground, river banks.

Smilax Pseudo-China, L. Bamboo-briar. Rootstock tuberous; stems and branches unarmed, or with very few weak prickles; lanceolate-heart-shaped, or on the branchlets ovate-oblong, cuspidate-pointed, often rough-cilicate, becoming firm in texture; peduncles flat, 2–3′ long. On sandy argillaceous uplands. Both are collected as sarsaparilla. The tuberous rooted species is preferable. Collect in fall.

Convallaria majalis, L. Lily of the Valley. A low perennial herb, glabrous, stemless, with slender running rootstocks, sending up from a scaly-sheathing bud 2 oblong leaves, with their long sheathing petioles enrolled one within the other,

so as to appear like a stalk, and an angled scape bearing a one-sided raceme of pretty and sweet-scenting flowers. Perianth bell-shaped (white), 6-lobed, deciduous; the lobes recurved, stamens 6, included, inserted on the base of the perianth; anthers introrse. Ovary 3-celled, tapering into a stout style; stigma 3-angular. Berry few-seeded, red. Found abundantly on the western slopes of the Little and Big Frog Mountains, East Tennessee, in the humid atmosphere of about 3,000° elevation. It is, to all appearances, the same as the European plant. The flowers, the herb and the root are collected separately.

Polygonatum gigantium, Dietrich. GREAT SOLOMON'S SEAL. Perennial herb with tall, erect and at last curving stems, 2–7° high, glabrous throughout, terete. Leaves ovate, partly clasping, 3–8′ long, the upper oblong and nearly sessile, many-nerved; peduncles 2–8-flowered, jointed below the flower. Perianth cylindrical-oblong, 5–9′ long, 6-lobed at the summit; the 6 stamens inserted on or above the middle of the tube, included. Ovary 3-celled. Berry globular, black. Rich soil on the edges of woods, along river banks. Fl. May. The root is collected in the fall.

Uvularia perfoliata, L. BELLWORT. A graceful low perennial, stems terete from a short fleshy rhizome, naked or scaly at base, forking above, bearing oblong, perfoliate, flat and membranaceous leaves with smooth margins, and yellowish drooping flowers. Plant glaucus, ½–1½° high. Perianth narrowly bell-shaped, deciduous, segments granular-pubescent within, 8–16″ long; stamens shorter than the styles. Capsule truncate, coriaceous, 3-lobed. Woods, preferring siliceous soil. Copiously growing on the hilltops south of Nashville. Fl. May. The root is used. (Eli Lilly & Co.)

Erythronium Americanum, Ker. DOG'S-TOOTH VIOLET. Stemless herb, with two smooth, shining flat leaves, tapering into petioles and sheathing the base of the one-flowered scape, rising from a deep solid-scaly bulb. Scape 6–9′ high, leaves elliptical-lanceolate, pale green, mottled with purplish and

whitish and commonly minutely dotted. Perianth light yellow, lily-like, of 6 distinct lanceolate sepals, recurved or spreading above, deciduous, the 3 inner usually with a callous tooth on each side of the erect base, and a groove in the middle. Filaments 6, awl-shaped; anthers oblong, linear. Style elongated, club-shaped. Capsule obovate, contracted at base, 3-valved, loculicidal. Rich hillsides; wherever it occurs it is in large patches. March-April. Collect the leaves before flowering.

Trillium erectum, L. WAKE-ROBIN. Low perennial, a single stem arising from a premorse tuber-like rootstock, naked, bearing at the summit a whorl of 3 ample, commonly broadly ovate, more or less ribbed but netted-veined leaves and a terminal large flower. Leaves subsessile; ray broadly rhombic, 2½–6′ wide, shortly acuminate; pedicel longer than the flower, 1–3′ long, usually more or less inclined or declinate; petals ovate-lanceolate, 9–18″ long, brown-purple, sometimes pinkish; stamens equaling or exceeding the stout, distinct-spreading or recurved stigmas; fruit ovate, 1′ long, reddish. Flower ill-scented. Rich woodlands, Middle Tennessee, and prominently Cumberland Mountains. Fl. April–May. The rhizome. Collect in July.

Chamælirium Carolinianum, Willd. **Ch. luteum**, Gray. DEVIL'S-BIT. Smooth herb, with a wand-like stem, from a bitter, thick and abrupt tuberous rootstock, terminated by a long wand-like spiked raceme 4–12′ long, of small bractless flowers; fertile plant more leafy than the staminate. Leaves flat, lanceolate, the lowest spatulate, tapering into a petiole. Flowers dicœcious. Perianth of male flowers, of 6 spatulate-linear (white), spreading, 1-nerved sepals, withering, persistent. Filaments thread-like, white, anthers 2-celled extrorse. Fertile flowers with rudimentary stamens. Styles linear-club-shaped, stigmatic along the inner side. Capsule ovoid-oblong, not lobed, of a thin texture, loculicidally 3-valved from the apex, many-seeded. Dry woodlands. The oak-

barrens around Tullahoma, and the barrens beyond Dickson abound with it. Fl. July–August. The rootstock, collected late in summer.

Veratrum viride, Ait. American White Hellebore. A robust herbaceous perennial, with simple stems from a thickened base, producing coarse fibrous roots. Stem stout, very leafy to the top, 2–7° high; leaves 3-ranked, plaited and strongly veined, broadly oval, pointed, sheath-clasping; panicle pyramidal, the dense spike-like racemes spreading; perianth yellowish-green, moderately spreading, the segments ciliate-serrulate; ovary glabrous; capsule many-seeded. In the coves on the foot of the Smoky Mountains. Fl. July. Collect the root late in autumn.

JUNCACEÆ. (Rush Family.)

Juncus effusus, L. Common or Soft Rush. Grass-like or rush-like herb, with small flowers, a regular and hypogynous persistent perianth of 6 similar glumaceous sepals, 3 stamens and a single short style, 3-filiform, hairy stigmas and 3-celled ovary. Scape soft and pliant, 2–4° high; inner sheaths awned, panicle diffusely much branched, many-flowered; flowers small, $1\frac{1}{4}''$ long, greenish, solitary on the pedicels or ultimate ramifications of the panicle. Sepals lanceolate, very acute, as long as the narrow triangular obovate retuse and pointless greenish-brown capsule. Anthers as long as the filaments; style very short; sheaths at base of the stem leafless. Around ponds and ditches, common. Fl. May. In homeopathic practice only.

ARACEÆ. (Arum Family.)

Arum triphyllum, Torr. Indian Turnip. Low perennial herb, with a tuberous rootstock or corm, sending up a simple scape sheathed with the petioles of the compound veiny leaves. Leaves mostly 2, divided into 3 elliptical-ovate, pointed leaflets. Floral envelope, properly called so, none.

Represented by a spathe, surrounding the spadix; flowers naked, *i. e.*, without perianth. Spathe convolute below, incurved-hooded at the ovate-lanceolate, pointed summit. Spadix mostly dicœcious, club-shaped, obtuse, much shorter than the spathe. Corm turnip-shaped, wrinkled, farinaccous, with an intensely acrid juice; spathe, with the petioles and sheets, green or often variegated with dark purple and whitish stripes or spots. Rich, damp woodlands; plentiful everywhere. April–May. Collect the corm in summer.

Arum Dracontium, Schott. DRAGON ROOT. Stouter than the former. Leaf usually solitary, pedately divided into 7–11 oblong-lanceolate pointed leaflets; spadix often androgynous, tapering to a long and slender point beyond the oblong and convolute-pointed, greenish spathe. Corms clustered; petiole 1–2° long, much longer than the peduncle. Fl. March–April. Collect the corms with the former.

Symplocarpus fœtidus, Salisb. SKUNK-CABBAGE. Perennial herb, diffusing a penetrant, disagreeable odor. The nearly sessile spathes which barely rise out of the ground, precede in early spring, February or March, the at length large and broad, entire, veiny leaves, which are ovate, cordate 1–2° long, short-petioled; spathe spotted and striped with purple and yellowiish-green, ovate, incurved; fruit (in autumn), 2–3′ in diameter, in decay shedding the bulblet-like seeds, which are 4–6″ long. Fl. April. The corm collected in autumn. Mountain bogs, East Tennessee.

Acorus Calamus, L. SWEET FLAG. CALAMUS. Pungent aromatic plants, especially the thick creeping rootstocks (calamus of the shops), which send up 2-edged, sword-like leaves, and scapes somewhat like them, bearing the spadix on one edge; the upper and more foliaceous prolongation sometimes considered as a kind of open spathe. Along creeks and ponds; rare in this State according to my own experience. The rhizome, stripped of rootlets and the epidermis peeled off.

ALISMACEÆ.

Alisma Plantago, L. Water-Plantain. Herb growing in marshes, with scape-like stems, sheating leaves and perfect flowers; perianth of 3 herbaceous, persistent sepals and as many conspicuous white deciduous petals, which are involute in the bud; stamens 6, ovaries many, on a flattened receptacle, forming flattened, coriaceous achenes, which are dilated and 2–3 keeled on the bark. Roots fibrous. Leaves all from the root, several ribbed. Scape with whorled, panicled branches. Fl. June–July. Everywhere in stagnant waters. Collect the rhizome.

GRAMINEÆ. (Grass Family.)

Anthoxanthum odoratum, L. Sweet Vernal Grass. Low, slender perennial, very sweet scented in drying. Flowers in a contracted, spike-like panicle. Glumes 5, the third and fourth empty, hairy, 2-lobed and awned on the back, the flowering glum and palet small, hyaline and obtuse; basal glumes persistent, very thin, acute-keeled, the lower half as long as the upper. Squamulæ none. Stamens 2. Spikelets (brownish or tinged with green) spreading at flowering time; one middle glum bearing a bent awn from near the base, the other short-awned below the tip. Naturalized from Europe in the Northern States, but rare in our meadows. With the exception of the upper counties of East Tennessee, our territory seems to be beyond the southern limits of its range. A homeopathic remedy.

Lolium temulentum, L. Bearded Darnel. An annual grass; culm $1\frac{1}{2}$–$2\frac{1}{2}$° high, spikelets many-flowered, sessile on opposite sides of a zigzag-jointed, channeled rhachis, forming a spike, placed edgewise; outer glumes fully equalling the 5–7 flowered spikelet; awn longer than the flower, $\frac{1}{2}'$ long. Continually introduced, with imported seeds, into grain fields, but not naturalizing like its congener L. perenne, which is getting quite frequent. It is used in Homeopathy.

Agropynum repens, Beauv. Quick Grass. Perennial grass hav-

ing nearly the generic characters of the foregoing, but spikelets 4–8 flowered, placed flatwise on the rhachis. Spikelets compressed, 2-ranked, alternate on opposite sides of a solitary, terminal spike, simple at each joint, glabrous or nearly so; glumes 3–7-nerved, rhachis glabrous, but rough on the edges; awns, when present, straight; leaves flat and often roughish or pubescent above. It exists in several varieties; the one which appears as an obnoxious intruder into our fields and gardens, on account of its very long, creeping and matted rootstocks, is a naturalized immigrant from Europe; while another, known in the Western States as Blue-joint, or Blue-stem, is indigenous and highly esteemed there as a nutritious and productive meadow-grass. It is used as an emollient.

Zea Mays, L. INDIAN CORN. The styles and stigmas known as corn silk, collected before drying up. It is received into the latest edition of the U. S. Dispensatory in the list of the there called "official" drugs. It is exhibited in the form of a fluid extract as a mild diuretic.

CLASS III.—CRYPTOGAMOUS ACROGENS.

FILICES. (FERNS.)

Polypodium vulgare, L. POLYPODY. Leafy plant, with the leaves (fronds) raised on a petiole (stipe), rising from a creeping root, rolled up in the bud and bearing on the under surface small, reticulated sporangia, in rounded fruit-dots (sori) midway between the midrib and the margin. Fronds evergreen, oblong, smooth both sides, 4–10′ high, simple and deeply pinnatifid; the divisions linear-oblong, obtuse or somewhat acute, remotely and obscurely toothed. Veins once or twice forked. Fruit-dots large. Common on rocks and trees in the Cumberland and Alleghany Mountains. The leaves are used. (Parke, Davis & Co.)

Adiantum pedatum, L. MAIDEN-HAIR. A delicate and elegant fern, having the frond forked at the summit of the upright, slender stalk, 9–15′ high, the recurved branches bearing on one side several slender-spreading pinnate divisions; pin-

nules numerous, short-stalked and obliquely triangular-oblong, entire on the lower margin, from which the veins all proceed, and cleft and fruit-bearing on the other. Fruit-dots marginal. The fronds are used.

Asplenium Filix-fœmina, Bernh. THE FEMALE FERN. Frond 1–3° high, ovate-oblong or broadly lanceolate, twice pinnate; pinnæ lanceolate, numerous; pinnules confluent on the secundary rhachis by a narrow margin, oblong and doubly serrate, or elongated and pinnately incised with cut-toothed segments. Indusium delicate, curved, often crossing the vein and attached to both sides of it, thus becoming veniform or shaped like a horse-shoe. Moist ground. The most abundant fern of our woods. The rootstock. It is on the list of some drug-houses, but is seldom used.

Aspidium marginale, Swartz. SHIELD FERN. Frond evergreen, smooth, thickish and almost coriaceous, twice pinnate, ovate-oblong in outline, 1–2° long; pinnæ lanceolate, acuminate, slightly broadest above the base; pinnules oblong or oblong scythe-shaped, crowded, obtuse or pointed, entire or crenately toothed. Stipes very chaffy; fruit-dots close to the margin, round, borne on the back of the veins. Indusium flat, orbicular and peltate at the center. Principally in mountains, Cumberland and Alleghanies, where one can never get out of sight of it. It is equally efficacious as an anthelmintic as the Asp. Filix mas of Europe and the northern limits of the United States. The rootstock is collected.

Osmunda regalis, L. BUCKHORN FERN. ROYAL FERN. The largest and most showy of our ferns, producing two very different looking kinds of fronds. The fertile fronds are destitute of chlorophyll, very much contracted, bearing on the margins of the narrow, rhachis-like divisions short-pedicelled and naked sporangia; these are globular, thin and reticulated, large, opening by a longitudinal cleft into 2 valves, and bearing near the apex a small patch of thickened oblong cells, the rudiment of a transverse ring. The

sterile fronds are truly bipinnate, very smooth, pale green, 2–7° high; pinnules 13–25 oblong-oval, finely serrulate, especially toward the apex, otherwise entire or crenately lobed toward the rounded, oblique and truncate, or even cordate and semi-auriculate base; sessile or short-stalked, 1–2′ long. Common in swamps and wet woods. The rhizome is collected. Not in the latest edition of the U. S. Dispensatory, but on the lists of several drug-houses.

OPHIOGLOSSIACEÆ. (Adder's Tongue Family.)

Botrychium ternatum, Swartz. Moonwort. Frond with an anterior fertile and a posterior sterile segment; the former erect, 2–4 pinnate, the contracted divisions bearing a double row of sessile, naked sporangia; these are distinct, rather coriaceous, not reticulated, globular, without a ring, and open transversely into two valves. Plant fleshy, 4–16′ high, sparsely hairy; sterile segment long-petioled from near the base of the plant, broadly triangular, ternate and variously decompound, with stalked divisions ovate-lanceolate and doubly incised. This is the common form throughout the State. The variety luniarioides, *Gray*, with smaller fronds, ultimate segments roundish-reniform, belongs to the higher mountains of East Tennessee. Not in the U. S. Dispensatory, but on the list of Eli Lilly & Co.

LYCOPODIACEÆ. (Club-moss Family.)

Lycopodium complanatum, L. Ground Pine. Low, creeping or decumbent evergreen perennial, with imbricated, one-nerved leaves. Spore-cases in the axils of the upper leaves forming a spike. Stems extensively creeping, often subterranean, the erect or ascending branches several times forked above; bushy branchlets crowded, flattened, fan-like and spreading, all clothed with minute imbricated-appressed awl-shaped leaves in 4 ranks, with decurrent united bases, the lateral rows with somewhat spreading tooth-like tips, those of the upper and under row smaller, narrower, wholly appressed; peduncle slender, bearing 2–4 cylindrical spikes. Over the

whole chain of the Cumberland Mountains, especially where pines prevail; also in laurel thickets. Not in the U. S. Dispensatory, but on the drug lists.

MUSCI. (Mosses.)

Polytrichum juniperinum, L. Haircap Moss. Robin's Rye. A fine species of acrocarpous mosses with a peculiar rigid habit. The veil or calyptra which covers the operculum or lid of the capsule, is rough with dependent hairs, and the mouth of the capsule closed with a flat membrane continued from the tips of the teeth. The capsule is angular and furnished with a little apophysis below. It is common in dry woods in the mountains, as well as on the hilltops of Middle Tennessee. It is considered to be a powerful diuretic.

GLOSSARY

OF UNFAMILIAR WORDS USED IN THE DESCRIPTION OF THE MEDICINAL SPECIES CONTAINED IN THIS TREATISE.

Abnormal. Not according to the usual structure.
Abortion. Not reaching the full development.
Abortive. Arrested in development; sterile.
Acaulescent. Without a stem.
Accumbent (cotyledon). Edges turned against the radicle.
Acerb. Sour and astringent.
Achene. A dry and hard, 1-celled, 1-seeded indehiscent fruit. (Compositæ.)
Achlamydeous. Without calyx or corolla.
Acicular. Needle-shaped.
Acrogenous. Growing from the apex by a terminal bud or cell.
Aculeate. Beset with prickles.
Acuminate. Tapering at the end.
Acute. Terminating with a sharp angle.
Adnate. Attached to, or united to another part or organ, in part or fully.
Adventive. Recently imported, and not sure of its permanency.
Æstivation. The position of the parts of the perianth in the bud.
Alate. Winged.
Albumen. Any deposit of nutriment around the embryo.
Albuminous. Having albumen.
Alliaceous. Having the smell or taste of garlic.
Alternate. Not opposite to each other from the same level.
Alveolate. Having angular depressions like a honey-comb.
Ament. A catkin; a scaly unisexual spike.
Amphitropus (ovule or seed). Half inverted and straight, with lateral hilum.
Amplectant. Clasping the stem.
Anastomosing. Connecting by cross-veins and forming a network.
Anatropus (ovule). Inverted and straight, with the micropile next to hilum and the radicle inferior.
Androgynous. Having both staminate and pistillate flowers.
Androus. Having stamens (in composition).

Angiospermous. Having the seeds enclosed within a pericarp.
Annuals. Of one year's duration.
Annular. Ring-shaped.
Anther. The polliniferous part of stamens.
Antheridium. In cryptogams, the organ corresponding to an anther.
Anthesis. Period of expansion of a flower.
Apetalous. Having no petals.
Apical. Situated at the apex.
Apiculate. Terminating in a short point.
Appressed. Lying close to anything.
Aquatic. Living in water.
Arachnoid. Cobwebby.
Archegonium. The organ in higher cryptogams, corresponding to a pistil.
Arcuate. Curved.
Areolate. Reticulate.
Aril. An appendage growing at or near the hilum of a seed.
Arillate. Having an aril.
Articulate. Having a joint.
Ascending. Tending upward.
Assurgent. The same as former.
Attenuate. Becoming thin or slender.
Auricle. Ear-shaped appendage.
Auriculate. Having auricles.
Awl-shaped. Narrowed upward to a rigid point.
Awn. A bristle-shaped appendage.
Axil. The angle between a petiole or branch and the stem.
Axile. Situated in the axis.
Axillary. Situated in an axil.
Axis. The main central line of any organ or group of organs.
Baccate. Berry-like; pulpy throughout.
Barbed. Furnished with rigid points or short bristles, usually reflexed like the barb of a fishhook.
Basal, basilar. At, or pertaining to the base.
Beaked. Ending in a beak or prolonged tip.
Bearded. Furnished with long, stiff hairs.
Berry. A fruit whose entire pericarp is pulpy or fleshy.
Bi or bis, as a prefix, means doubly.
Bidentate. Having two teeth.
Biennial. Of two years' duration.
Bifid. Two-cleft.
Bilabiate. Two-lipped.
Bilocellate. Having two secondary cells.
Bilocular. Two celled.
Bisexual. Having both stamens and pistils.
Bladdery. Like an inflated bladder.

Blade. The limb or expanded portion of a leaf.
Bract. A modified leaf subtending a flower or belonging to an inflorescence, or sometimes cauline.
Bracteate. Having bracts.
Bracteolate. Having bractlets.
Bracteose. With many and conspicuous bracts.
Bractlet. A secondary bract, as one on the pedicel of a flower.
Bristle. A stiff hair.
Bud. The incipient state in the growth of a stem or branch; an unexpanded flower.
Bulb. A subterranean leaf-bud, with fleshy scales or coats.
Bulbiferous. Bearing bulbs.
Bulblet. A small bulb, especially when in the axil of a leaf.
Bulbous. Having the character of a bulb.
Caducous. Falling off very early.
Calcarate. Having a spur.
Callus. An indurated, hardened surface.
Calyculate. Having bracts around the calyx, imitating an outer calyx.
Calyptra. The membraneous hood covering the capsule of mosses.
Calyx. The outer perianth of the flower.
Campanulate. Bell-shaped; cup-shaped with a broad base.
Campylotropous (ovule or seed). So curved as to bring the apex and base near together.
Canaliculate. Longitudinally channeled.
Canescent. Hoary with gray pubescence.
Capitate. Shaped like a head; collected into a dense cluster.
Capitellate. Collected in a small head.
Capsular. Belonging to or being of the shape of a capsule.
Capsule. A dry dehiscent fruit, composed of more than one carpel; the spore-case of mosses.
Carinate. Having a keel or projecting longitudinal median line on the lower surface.
Carpel. A simple pistil, or one member of a compound pistil.
Cartilaginous. Firm and tough.
Caruncle. An appendage at or about the hilum of a seed.
Carunculate. Having a caruncle.
Caryopsis. A grain, as of grasses; a seed-like fruit with a thin pericarp adnate to the contained seed.
Castaneous. Of chestnut color.
Catkin. An ament; sterile flower in oaks, etc.
Caudate. Having a slender tail-like appendage.
Caudex. The persistent base of an otherwise annual herbaceous stem.
Caulescent. Having a manifest stem.
Cauline. Belonging to the stem.
Cavernous. Hollow; full of air-cavities.

Cell. One of the minute vesicles, of various forms, of which plants are formed; any structure containing a cavity, as the cells of an anther, ovary, etc.

Cellular (tissue). Composed of thin-walled cells, in distinction from fibrous or vascular.

Cespitose. Growing in tufts; forming mats or turf.

Chaff. A small thin scale or bract, becoming dry and membranous.

Chaffy. Having or resembling chaff.

Channeled. Deeply grooved longitudinally.

Chartaceous. Having the consistency of writing paper.

Chlorophyll. The green grains within the cells of plants.

Ciliate. Marginally fringed with hairs.

Ciliolate. Minutely ciliate.

Cinereous. Ash color.

Circinate. Coiled from the top downward, as the young frond of a fern.

Circumcissile. Dehiscing by a regular transverse circular line of division.

Clavate. Club-shaped; gradually thickening upward.

Cleistogamous. Fertilized in the bud without the opening of the flower.

Cleft. Cut about the middle.

Cluster. An assemblage of flowers on a plant.

Coalescence. The union of parts or organs of the same kind.

Coccus. One of the parts into which a lobed fruit with 1-seeded cell splits.

Cochleate. Spiral like a snail-shell.

Cohesion. The union of organs with one another.

Columella. The persistent axis of some capsules, spore-cases, etc.

Columnar. Like a column.

Commissure. The surface by which one carpel joins another, as in Umbelliferæ.

Comose. Furnished with a tuft of hairs.

Complicate. Folded upon itself.

Compound. Compossd of two or more similar parts united into one whole; compound leaf; one divided into separate leaflets.

Compressed. Flattened laterally.

Conduplicate. Folded together lengthwise.

Confluent. Running into each other.

Coniferous. Cone-bearing.

Connate. United congenitally.

Connective. The portion of a stamen which connects the two cells of the anther.

Connivent. Coming into contact; converging.

Conoidal. Nearly conical.

Convergent. Approaching each other.

Convolute. Rolled up longitudinally.

Cordate. Heart-shaped, with the point upward.

Coriaceous. Leathery in texture.
Corm. The enlarged fleshy base of a stem, bulb-like but solid.
Corolla. The inner perianth of distinct or connate petals.
Coroniform. Shaped like a crown.
Corrugate. Wrinkled or in folds.
Corymb. A flat-topped or convex flower cluster, equivalent to a contracted raceme, and progressing in its flowering from the margin inward.
Corymbose. Corymb-like; in corymbs.
Costa. A rib; a mid-rib or mid-nerve.
Costate. Ribbed; having one or two longitudinal ribs or nerves.
Cotyledones. The foliar portion of first leaves (one, two or more) of the embryo as found in the seed.
Crateriform. In the shape of a saucer or cup, hemispherical or more shallow.
Creeping, Running along or under the ground and rooting.
Crenate. Dentate with rounded teeth.
Crenulate. Finely crenate.
Crested, cristate. Bearing an elevated appendage resembling a crest.
Crown. An inner appendage to a petal or to the throat of a corolla.
Cruciate. Cross-shaped.
Crustaceous. A hard and brittle texture.
Cucullate. Hooded or hood-shaped; curled.
Culm. The peculiar stem of sedges and grasses.
Cuneate. Wedge-shaped; triangular with the acute angle downward.
Cuspidate. Tipped with a cusp, or sharp and rigid point.
Cylindraceous. Somewhat or nearly cylindrical.
Cyme. A usually broad and flattish determinate inflorescence, *i. e.*, with central or terminal flowers blooming earliest.
Cymose. Cyme-like; bearing cymes.
Deciduous. Not persistent; not evergreen.
Decompound. More than once compounded or divided.
Decumbent. Reclining, but with the summit ascending.
Decurrent (leaf). Extending below the insertion of the leaf.
Decussate. Alternating in pairs at right angles, or in threes.
Definite. Of a constant number, not exceeding twenty.
Deflexed. Bent or turned abruptly downward.
Dehiscent. Opening regularly by valves, slits, etc., as a capsule or anther.
Deltoid. Shaped like the Greek letter △.
Dentate. Toothed, with the teeth directed outward.
Denticulate. Minutely dentate.
Depressed. Somewhat flattened from above.
Di, dis. As a prefix signifying two or twice.
Diadelphous (stamens). Combined in two sets.
Diandrous. Having two stamens.

Dichotomous. Forking by pairs.
Dicotyledonous. Having two cotyledons.
Didymous. Twin; found in pairs.
Didynamous (stamens). In two pairs of unequal length.
Diffuse. Widely or loosely spreading.
Digitate. Compound, with the members borne in a whorl at the apex of the axis.
Dimerous. Having all the parts in twos.
Dimidiate. In halfs, as if one half were were wanting.
Dimorphous. Occurring in two forms.
Diœcious. With the two kinds (male or female) of flowers on separate plants.
Discoid. Resembling a disk. Discoid head, in Compositæ, one without ray flowers.
Disk. A development of the receptacle at or around the base of the pistil. In Compositæ, the tubular flowers of the head as distinct from the ray.
Dissected. Cut into numerous segments.
Distichous. In two vertical ranks.
Distinct. Separate; not united; evident.
Divaricate. Widely divergent.
Divergent. Inclined away from each other.
Divided. Lobed to the base.
Dorsal. On or relating to the back or outer surface of an organ.
Drupaceous. Resembling or in the nature of a drupe.
Drupe. A fleshy or pulpy fruit with the inner portion of the pericarp (1-celled and 1-seeded, or sometimes several celled), hard or stony; prunes, peaches.
E or Ex. A prefix; has often a privative significance, as "ebracteate," without bracts.
Echinate. Beset with prickles.
Effuse. Very loosely spreading.
Elliptical. In the form of an ellipse; oval.
Emarginate. Having a shallow notch at the extremity.
Embryo. The rudimentary plantlet within the seed.
Endocarp. The inner layer of a pericarp.
Endogenous. Growing throughout the substance of the stem, instead of by superficial layers.
Entire. Without toothing or division.
Ephemeral. Lasting only for one day.
Epidermis. The cuticle or thin membrane covering the outer surface.
Epigynous. Growing on the summit of the ovary, or apparently so.
Epiphyte. A plant growing attached to another plant, but not parasitic; an air-plant.

Equitant. Astride; used of conduplicate leaves which enfold each other in two ranks, as in Iris.
Erect. Vertical; upright as respects the plane of the base.
Erose. As if gnawed.
Exalbuminous. Without albumen.
Excurrent. Running out, as a nerve of a leaf projecting beyond the margin.
Exfoliating. Cleaving off in thin layers.
Exogenous. Growing by annular layers near the surface; belonging to Exogens.
Exserted. Projecting beyond an envelope, as stamens from a corolla.
Extrorse. Facing outward.
Falcate. Scythe-shaped, curved and flat, tapering gradually.
Farinaceous. Containing starch.
Fascicle. A close bundle or cluster.
Fastigiate. Erect and near together.
Fertile. Capable of producing fruit, or productive, as a flower having a pistil or an anther with pollen.
Fibrous. Composed of or resembling fibres. Fibrous tissue, a tissue formed of elongated thick-walled cells.
Fibro-vascular. Composed of woody fibres.
Filament. The part of the stamen which supports the anther; any thread-like body.
Filiferous. Thread-bearing.
Fimbriate. Fringed.
Fingered. Digitate.
Fistular. Hollow and cylindrical.
Flaccid. Lax and weak.
Fleshy. Succulent, juicy; of the consistence of flesh.
Flexuous. Zigzag; bending alternately in opposite directions.
Flaccose. Clothed with locks of soft hair or wool.
Foliaceous. Leaf-like in texture or appearance.
Foliate. Having leaves.
Foliolate. Having leaflets.
Follicle. A fruit consisting of a single carpel, dehiscing by the ventral suture.
Follicular. Like or pertaining to follicles.
Forked. Divided into nearly equal branches.
Fornicate. Arched over, as the corona of some Boraginaceæ, closing the throat; Symphytum.
Free. Not adnate to other organs.
Friable. Easily crumbled.
Frond. The leaf of Ferns and some other Cryptogams; also in some Phænogams, as in Lemnaceæ, where it serves for stem as well as foliage.

Fruit. The seed-bearing part of a plant.
Fugacious. Fading very early; flowers of Helianthemum.
Funicle. The free stalk of an ovule or seed.
Fusiform. Spindle-shaped; swollen in the middle and thinning out toward each end.
Galea. A hooded or helmet-shaped portion of a perianth, as the upper sepal of Aconitum, and the upper lip of some bilabiate corollas.
Galeate. Helmet-shaped; having a galea.
Gamopetalous. Having the petals of the corolla more or less united.
Gemma. A bud, or body analogous to a bud, by which a plant propagates itself.
Gemmiparous. Producing gemmæ.
Geniculate. Bent abruptly like a knee.
Gibbous. Protuberant on one side.
Glabrate. Somewhat glabrous or becoming glabrous.
Glabrous. Smooth; not rough, pubescent, or hairy.
Gland. A secreting organ; any protuberance or appendage having the appearance of such an organ.
Glandular. Bearing glands or being of the nature of glands.
Glaucous. Covered or whitened with a bloom.
Globous. Globular; being spherical or nearly so.
Glomerate. Compactly clustered.
Glumaceous. Furnished with or resembling glumes.
Glume. One of the chaffy bracts of the inflorescence of grasses.
Granular. Composed of small grains.
Gregarious. Growing in groups or clusters.
Gymnospermous. Bearing naked seeds; without an ovary.
Gynandrous. Having the stamens borne upon the pistil, as in Orchidaceæ.
Gynobase. An enlargement or prolongation of the receptacle bearing the ovary.
Habit. The general appearance of a plant.
Halbert-shaped. The same as hastate.
Hastate. Like an arrow-head, but with the basal lobes pointing outward at nearly right angles.
Head. A dense cluster of sessile or nearly sessile flowers on a very short axis or receptacle.
Heart-shaped. Ovate, with a sinus at the base.
Herb. A plant with no persistent woody stem above ground.
Herbaceous. Having the character of an herb; leaf-like in color and texture.
Heterogamous. Bearing two kinds of flowers.
Hilum. The scar or point of attachment of the seed.
Hirsute. Covered with rather stiff hairs.
Hispid. Beset with rigid or bristly hairs or with bristles.

Hispidulous. Minutely hispid.
Hoary. Grayish white, with a fine, close pubescence.
Homogamous. Bearing but one kind of flowers.
Hooded. Shaped like a hood or cowl.
Hyaline. Transparent or translucent.
Hybrid. A cross-breed of two species.
Hypogynous. Situated on the receptacle beneath the ovary and free from it and from the calyx; having the petals and stamens so situated.
Imbricate. Overlapping like the shingles on a roof.
Immersed. Growing wholly under water.
Incised. Cut sharply and irregularly, more or less deeply.
Included. Not at all protruding from an enclosure.
Incumbent (cotyledons). Lying with the back against the radicle.
Indefinite (stamens). Inconstant in numbers, or very numerous.
Indehiscent. Not opening by valves, and remaining persistently closed.
Indigenous. Native of the country.
Indurated. Hardened.
Indusium. The proper covering of the spores or fruit-dot in ferns.
Inequilateral. Unequal-sided.
Inferior. Lower or below; outer or anterior. Inferior ovary, one that is adnate to the calyx.
Inflated. Bladdery.
Inflorescence. The flowering part of a plant, and especially the mode of its arrangement.
Infra. In composition, below; as "infra-axillary," below the axil.
Inserted. Attached to or growing out of.
Inter or Intra. In composition, between.
Interfoliaceous. Between the leaves of a pair, as the stipules of some Rubiaceæ.
Internode. The portion of a stem between two nodes.
Intramarginal. Within or near the margin.
Introrse. Turned inward or toward the axis.
Involucel. A secondary involucre, as that of an umbellet in Umbelliferæ.
Involucellate. Having an involucel.
Involucral. Belonging to an involucre.
Involucrate. Having an involucre.
Involucre. A circle or collection of bracts surrounding a flower-cluster or head, or a single flower.
Involute. Rolled inward.
Irregular (flower). Showing inequality in the size, form, or union of its similar parts.
Julaceous. Resembling a catkin in appearance.
Keel. A central dorsal ridge, like the keel of a boat; the two anterior united petals of a papilionaceous flower.

Kidney-shaped. Reniform; crescentive, with the ends broad and rounded.
Labiate. Lipped; belonging to the Labiatæ.
Lacerate. Irregularly cleft as if torn.
Laciniate. Slashed; cut into narrow pointed lobes.
Lamella. A thin flat plate or laterally flattened ridge.
Lanceolate. Shaped like a lance-head, broadest above the base and narrowed to the apex.
Lateral. Borne on the side.
Lax. Loose and slender.
Leaflet. A single division of a compound leaf.
Legume. The fruit of the Leguminosæ, formed of a simple pistil, and usually dehiscent by both sutures.
Leguminous. Pertaining to a legume or to the Leguminosæ.
Lenticular. Lentil-shaped; of the shape of a double-convex lens.
Lepidote. Beset with small scurvy scales.
Ligulate. Furnished with a ligule.
Ligule. A strap-shaped corolla, as in the ray-flowers of the Compositæ; a thin scarious projection from the summit of the sheath in grasses.
Liliaceous. Lily-like; belonging to the Liliaceæ.
Limb. The expanded portion of a gamopetalous corolla above the throat; the expanded portion of any petal, or of a leaf.
Linear. Long and narrow, with parallel margins.
Lip. Each of the upper and lower divisions of a bilabiate corolla or calyx; the peculiar upper petals in Orchids.
Lobe. Any segment of an organ, especially if rounded.
Lobed. Divided into or bearing lobes.
Locular. In composition, having cells.
Loculicidal. Dehiscent into the cavity of a cell through the dorsal suture.
Lunate. Of the shape of a half-moon.
Lyrate. Pinnatifid with a large and rounded lobe.
Macrospore. The larger kind of spore in Selaginaceæ, etc.
Marcescent. Withering, but persistent.
Marginal. Along the edge.
Marginate. Furnished with a border peculiar in texture or appearance.
Mealy. Farinaceous.
Membranaceous, Membranous. Thin and rather soft and more or less translucent.
Mericarp. One of the achene-like carpels of Umbelliferæ.
-merous. Having parts, as 2-merous, having two parts of each kind.
Micropyle. The point upon the seed at which was the orifice of the ovule.
Microspore. The smaller kind of spore in Selaginaceæ, etc.
Midrib. The central or main rib of a leaf.
Mitriform. Shaped like a mitre or cap.

Monadelphous (stamens). United by their filaments into a tube or column.
Monœcious. With stamens and pistils in separate flowers.
Moniliform. Resembling a string of beads.
Monocotyledonous. Having but one cotyledon.
Mucilaginous. Slimy; containing mucilage.
Mucro. A short and small, abrupt tip.
Mucronate. Tipped with a mucro.
Multifid. Cleft into many lobes or segments.
Muricate. Rough with short hard points.
Naked. Bare; without the usual covering or appendages.
Nectary. Any place or organ where nectar is secreted.
Nectariferous. Producing nectar.
Nerve. A simple or unbranched vein or slender rib.
Node. The place upon a stem which normally bears a leaf or whorl of leaves.
Nodose. Knotty or knobby.
Nucleus. The germ-cell of the ovule, which by fertilization becomes the seed; the kernel of a seed.
Numerous. Indefinite in number.
Nut. A hard, indehiscent, 1-celled and 1-seeded fruit, though usually resulting from a compound ovary.
Nutlet. A diminutive nut.
Ob. A Latin prefix, usually carrying the idea of inversion.
Obcompressed. Compressed dorso-ventrally instead of laterally.
Obconically. Inversely conical, having the attachment at the apex.
Obcordate. Inverted heart-shaped.
Oblanceolate. Lanceolate, with the broadest part toward the apex.
Oblique. Unequal-sided.
Oblong. Longer than broad, and with nearly parallel sides.
Obovate. Inverted ovate.
Obovoid. In the form of an inverted egg.
Obsolete. Out of use; rudimentary.
Obtuse. Blunt at the end.
Ocrea. A tubular stipule; Polygonum.
Ocreate. Having sheathing stipules.
Ochroleucous. Yellowish-white.
Officinal. Used in medicine.
Opaque. Dull; not shining or lustrous.
Operculate. Furnished with a lid.
Operculum. A lid; the upper portion of a circumcissile capsule.
Orbicular. Circular.
Orthotropus (ovule or seed). Erect, with the orifice or micropyle at the apex.
Oval. Broadly elliptical.
Ovary. The part of the pistil that contains the ovules.

Ovate. Egg-shaped; the broader end downward.
Ovoid. A solid with an oval outline.
Ovule. The part which after fertilization becomes the seed.
Palate. A rounded projection of the lower lip of the corolla, closing the throat.
Paleaceous. Chaffy.
Palet. The upper thin, chaffy or hyoline bract which, with the glume, encloses the flower in grasses.
Palmate (leaf). Radiately lobed or divided.
Palmately. In a palmate way.
Panicle. A loose, irregularly compound inflorescence with pedicelled flowers.
Panicled. Paniculate; borne in a panicle; resembling a panicle.
Papilionaceous (corolla). Having a standard, wings and keel, as general in Leguminosæ.
Papillose. Bearing minute conical projections.
Pappus. The modified calyx-limb in Compositæ, forming a crown of very various character at the summit of the achene.
Parasitic. Growing on and drawing nourishment from another plant.
Parietal. Borne on or pertaining to the wall or inner surface of a capsule.
Parted. Cleft to near the base.
Partial. In part only.
Pectinate. Comb-like; pinnatifid with very close-set segments.
Pedate. Palmately divided or parted, with the lateral segments 2-cleft.
Pedicel. The stem of a single flower; secondary.
Pedicellate. Borne on a pedicel.
Peduncle. A primary flower-stalk, supporting either a cluster or a solitary flower.
Pedunculate. Borne upon a peduncle.
Peltate. Shield-formed and attached to the support by the lower surface. Menispermum.
Pendulous. More or less hanging or declined.
Perennial. Lasting year after year.
Perfect (flower). Having both pistils and stamens.
Perfoliate (leaf). Having the stem apparently passing through it.
Perianth. The floral envelope, consisting of the calyx and corolla (when present), whatever their form.
Pericarp. The matured ovary.
Perigynium. The inflated sac which encloses the ovary in carex.
Perygynous. Adnate to the perianth, and therefore around the ovary and not at its base.
Persistent. Long-continuous, as a calyx upon the fruit; leaves through winter.
Personate (corolla). Bilabiate and the throat closed by a prominent palate.

Petal. A division of the corolla.
Petaloid. Colored, and resembling a petal.
Petiolate. Having a petiole.
Petiole. The footstalk of a leaf.
Phænogamous. Having flowers with stamens and pistils, and producing seeds.
Phyllodium. A somewhat dilate petiole, having the form of and serving as a leaf-blade.
Pilose. Soft-hairy.
Pinna (pl. pinnæ). One of the primary divisions of a pinnate or compoundly pinnate frond or leaf.
Pinnate (leaf). Compound, with the leaflets arranged on each side of a common petiole.
Pinnatifid. Pinnately cleft.
Pinnule. A secondary pinna; one of the pinnately disposed divisions of a pinna.
Pistil. The seed-bearing organs of the flower, consisting of the ovary, stigma and style when present.
Pistillate. Provided with pistils, and, in its more restricted sense, without stamens.
Pitted. Marked with small depressions or pits.
Placenta. Any part of the interior of an ovary which bears ovules.
Plane. Level, with a flat surface.
Plicate. Folded into plaits, lengthwise.
Plumose. Having fine hairs on each side, like the plume of a feather, as the pappus-bristles of thistles.
Plumule. The bud or growing point of the embryo.
Pod. Any dry and dehiscent fruit.
Pollen. The fecundating grains contained in the anther.
Polliniferous. Bearing pollen.
Pollinium (pl. pollinia). A mass of waxy pollen, or of coherent pollen-grains, as in Asclepias and Orchids.
Polypetalous. Having several petals.
Pome. A kind of fleshy fruit, of which the apple is the type.
Porose. Perforated with small holes.
Posterior. In an axillary flower, on the side nearest to the axis of inflorescence.
Præmorse. Appearing as if beaten off.
Prickle. A small spine or more or less slender sharp outgrowth from the bark or rind.
Prismatic. Of the shape of a prism, angular with flat sides, and of nearly uniform size throughout.
Procumbent. Lying on the ground.
Proliferous. Producing offshoots.
Prostrate. Lying flat on the ground.

Proterogynous. Having the stigma ripe for the pollen before the maturity of the anthers of the flower.

Pseudo-costate. False-ribbed, as when a marginal vein or rib is formed by the confluence of the true veins.

Pteridophytes. Ferns and their allies.

Puberulent. Minutely pubescent.

Pubescent. Covered with short, soft or downy hairs.

Punctate. Dotted with depressions or with translucent internal glands or colored dots.

Pungent. Terminating in a rigid sharp point; acrid to the taste.

Putamen. The shell of a nut; the bony part of a stone fruit.

Quadrate. Square in outline.

Raceme. A simple inflorescence of pedicelled flowers upon a more or less elongated axis.

Racemose. In raceme, or resembling a raceme.

Radiate. Spreading from or arranged around a common centre; bearing ray-flowers.

Radical. Belonging to or proceeding from the root or base of the stem near the ground.

Radicle. The portion of the embryo below the cotyledons, more properly called the caudicle.

Radiculose. Bearing rootlets.

Rameal. Belonging to the branch.

Ramification. Branching.

Ray. The branch of an umbel; the marginal flowers of an inflorescence when distinct from the disk.

Receptacle. The more or less expanded or produced portion of an axis which bears the organs of a flower (the torus) or the collected flowers of a head.

Recurved. Curved downward or backward.

Reflexed. Abruptly bent or turned downward.

Regular. Uniform in shape and structure.

Reniform. Kidney-shaped.

Repand. With a slightly uneven and somewhat sinuate margin.

Resiniferous. Producing resin.

Reticulate. In the form of a net-work; net-veined.

Retrorse. Directed back or downward.

Retuse. With a shallow notch at a rounded apex.

Revolute. Rolled backward from the margin or apex.

Rachis. The axis of a spike or compound leaf.

Rhaphe. The ridge or adnate funicle which in an anatropous ovule connects the two ends.

Rhizome. Any prostrate or subterranean stem, usually rooting at the nodes and becoming erect at the apex; very variable in character, and including morphologically the tuber, corm, bulb.

Rhombic, rhomboidal. Obliquely four-sided.
Rib. A primary or prominent vein of a leaf.
Ringent. Gaping, as the mouth of an open, bilabiate corolla.
Root. Underground part of a plant which supplies it with nourishment.
Rootstock. Same as rhizome.
Rostrate. Having a beak.
Rosulate. In the form of a rosette.
Rotate (corolla). Whorl-shaped, flat and circular in outline.
Rotund. Rounded in outline.
Rudiment. A very insufficiently developed organ.
Rudimentary. Only slightly developed.
Rufous. Reddish-brown.
Rugose. Wrinkled.
Runcinate. Sharply incised, with the segments directed backward.
Runner. A filiform; or very slender stolon.
Saccate. Sac-shaped.
Sagittate. Shaped like an arrow-head, the basal lobes directed downward.
Salver-shaped (corolla). Having a slender tube abruptly expanded into a flat limb.
Samara. An indehiscent winged fruit.
Scabrous. Rough to the touch.
Scalariform (vessels). Having transverse markings, like the rounds of a ladder.
Scape. Peduncle rising from the ground, naked or without proper foliage.
Scapose. Bearing or resembling a scape.
Scarious. Thin, dry and membranaceous, not green.
Scobiform. Sawdust-like; aborted seeds in Liquidambar.
Scorpioid (inflorescence). Circinately coiled while in bud.
Scurf. Small bran-like scales on the epidermis.
Scymitar-shaped (leaf). Curved, with flat triangular section, the straighter edge the thickest.
Seed. The ripened ovule, consisting of the embryo and its proper coats.
Segment. One of the parts of a leaf or other like organ that is cleft or divided.
Sepal. A division of a calyx.
Septicidal (capsule). Dehiscing through the partitions and between the cells.
Septum. Any kind of partition.
Serrate. Having teeth pointed forward.
Serrulate. Finely serrate.
Sessile. Without footstalk of any kind.
Setaceous. Bristle-like.
Setose. Beset with bristles.
Sheath. A tubular envelope, as the lower part of a leaf in Grasses.
Sheathing. Enclosing by a sheath.

Shrub. A woody perennial, smaller than a tree.
Silicle. A short silique.
Silique. The peculiar pod of Cruciferæ.
Silky. Covered with close-pressed, soft and straight pubescence.
Simple. Of one piece; not compound.
Sinuate. With the outline of the margin strongly wavy.
Sinus. The cleft or recess between two lobes.
Smooth. Without roughness or pubescence.
Sorus (pl. sori). A heap or cluster applied to the fruit-dots of ferns.
Spadix. A spike with a fleshy axis.
Spathe. A large bract or pair of bracts enclosing an inflorescence.
Spatulate. Gradually narrowed downward from a rounded summit.
Spicate. Arranged in or resembling a spike.
Spiciform. Spike-like.
Spike. A form of simple inflorescence, with the flowers sessile, or nearly so, upon a more or less elongated common axis.
Spikelet. A small or secondary spike.
Spindle shaped. Same as fusiform.
Spine. A sharp woody or rigid outgrowth from the stem.
Spinose. Spine-like or having spines.
Sporangium. A spore-case.
Spore. The reproductive organ in cryptogams which corresponds to a seed.
Sporocarp. The fruit-cases of certain cryptogams containing sporangia or spores.
Spur. A hollow sac-like or tubular extension of some part of the blossom, usually nectariferous.
Squamula. A reduced scale, as the hypogynous scales in grasses.
Squarrose. Having spreading and projecting processes, such as the tips of involucral scales.
Squarrulose. Diminutively squarrose.
Stamen. One of the pollen-bearing or fertilizing organs of the flower.
Staminodium. A sterile stamen, or any structure without anther, corresponding to a stamen.
Standard. The upper dilated petal of a papilionaceous corolla.
Stellate, stelliform. Star-shaped.
Stem. The main ascending axis of a plant.
Sterile. Unproductive, as a flower without pistil, or stamen without anther.
Stigma. The part of a pistil through which fertilization by pollen is effected.
Stigmatic. Belonging to or characteristic of the stigma.
Stipe. The stalk-like support of a pistil; the leaf-stalk of a fern.
Stipitate. Having a stipe.
Stipular. Belonging to stipules.
Stipulate. Having stipules.
Stipule. Appendage at the base of a petiole or on each side of its insertion
Stolon. A runner or any basal branch that is disposed to root.

Stoloniferous. Producing stolons.
Stoma (pl. stomata). An orifice in the epidermis of a leaf serving for respiration.
Striate. Marked with fine longitudinal lines or ridges.
Strict. Very straight and upright.
Strigose. Beset with appressed, sharp, straight and stiff hairs.
Strobile. An inflorescence marked by imbricated bracts or scales as in the hop and pine-cone.
Style. The usually attenuated portion of the pistil connecting the stigma and ovary.
Sub. A Latin prefix usually signifying "somewhat or slightly."
Subulate. Awl-shaped.
Succulent. Juicy, fleshy.
Suffrutescent. Slightly or obscurely shrubby.
Suffruticose. Very low and woody; diminutively shrubby.
Sulcate. Grooved or furrowed.
Superior (ovary). Free from the calyx.
Suspended (ovule). Hanging from the apex of the cell.
Suture. A line of dehiscence.
Symmetrical (flower). Regular as to the number of its parts; having the same number of parts in each circle.
Synonym. A superseded name; an equivalent name.
Tail. A slender, terminal prolongation.
Terete. Having a circular transverse section.
Terminal. At or belonging to the apex.
Ternary. In threes, consisting of three.
Ternate. In threes.
Tetrodynamous. Having four long and two shorter stamens.
Tetragonal. Four-angled.
Thalamiflorous. Having the parts of the flower hypogynous.
Throat. The orifice of a gymopetalous corolla or calyx; the part between the proper tube and the limb.
Thyrse. A contracted or ovate and usually compact panicle.
Thyrsoid. Resembling a thyrse.
Tomentose. Densely pubescent with matted wool.
Tooth. A small marginal lobe.
Torose. Cylindrical, with contractions at intervals.
Torus. The receptacle of a flower.
Transverse. Across; in a right and left direction.
Tri-. In composition, three or thrice.
Triandrous. Having three stamens.
Trifoliolate. Having three leaflets.
Trigonous. Three-angled.
Trimorphous. Occurring under three forms.
Triquetrous. Having three salient angles, the side concave or channeled.

Truncate. Ending abruptly, as if cut off transversely.
Tuber. A thickened and short subterranean branch, having numerous buds or eyes.
Tubercle. A small tuber or tuber-like body.
Tuberiferous. Bearing tubers.
Tuberous. Having the character of a tuber; tuber-like in appearance.
Tumid. Swollen.
Tunicated. Having concentric coats, as an onion.
Turbinate. Top-shaped; inversely conical.
Twining. Winding spirally about a support.
Umbel. An inflorescence in which a cluster of peduncles or pedicels spring from the same point.
Umbellate. In or like an umbel.
Umbellet. A secondary umbel.
Umbonate. Bearing a stout prejection in the centre; bossed.
Undulate. With a wavy surface; repand.
Unguiculate. Contracted at the base into a claw.
Uni-. In composition, one.
Unisexual. Of one sex, either staminate or pistillate only.
Urceolate. Hollow and cylindrical or ovoid, and contracted at or below the mouth, like an urn.
Utricle. Small, bladdery, one-seeded fruit; any small bladder-like body.
Valvate. Opening by valves, as a capsule; in æstivation, meeting the edges without overlapping.
Valve. One of the pieces into which a capsule splits.
Vascular. Furnished with vessels or ducts.
Veins. Threads of fibro-vascular tissue in a leaf or other organ, especially those which branch (as distinguished from nerves).
Ventral. Belonging to the anterior or inner face of an organ; the opposite of dorsal.
Ventricose. Swelling unequally, or inflated on one side.
Vernation. The arrangement of leaves in the bud.
Verrucose. Covered with wart-like elevations.
Versatile (anther). Attached near the middle and turning freely on its support.
Vertical. Perpendicular to the horizon; longitudinal.
Verticillate. Disposed in a whorl.
Vesicle. A small bladder or air-cavity.
Vesicular, vesiculose. Composed of or covered with vesicles.
Villous. Bearing long and soft hairs.
Virgate. Wand-shaped; slender, straight and erect.
Viscid. Glutinous, sticky.
Whorl. An arrangement of leaves, etc., in a circle around the stem.
Wing. A membranous or thin expansion bordering or surrounding an organ; the lateral petal of a papilionaceous corolla.
Woolly. Clothed with long and tortuous matted hairs.

COMPARATIVE TRADE LIST

OF BOTANICAL DRUGS IN PRICES OFFERED AND ASKED FOR SPRING OF 1894.

Botanical Name.	Common Name.	Part Collected.	Selling, Per Pound, Cents.	Buying, Per Pound, Cents.
Hydrastis Canadensis	Yellow Puccoon	Root	40	20
Actæa alba	White Cohosh	Root	30	5
Actæa rubra	Red Cohosh	Root	30	.....
Cimicifuga racemosa	Black Cohosh	Root	15	2½
Coptis trifolia	Goldthread	Whole Plant	60	25
Hepatica triloba	Liverwort	Leaves	25	11
Liriodendron tulipifera	Yellow Poplar	Bark	18	2½
Menispermum Canadense	Moonseed	Root	23	4
Caulophyllum thalictroides	Blue Cohosh	Root	18	3
Jeffersonia diphylla	Rheumatism-root	Root	25	6
Podophyllum peltatum	May-apple	Root	18	3
Nuphar advena	Spatter Dock	Root	28	5
Nymphæa odorata	Water-lily	Root	30	7
Sanguinaria Canadensis	Blood-root	Root	16	4
Dicentra Canadensis	Squirrel-corn	Root	20	5
Thlaspi pursa pastoris	Shepherd's-purse	Herb	30	8
Helianthemum Canadense	Frost-weed	Herb	30	8
Polygala Seneca	Seneca Snakeroot	Root	75	30
Saponaria officinalis	Soapwort	Leaves	35	7
Saponaria officinalis	Soapwort	Root	30	9
Stellaria media	Chickweed	Herb	35	6
Hypericum perforatum	St. John's-wort	Herb	25	7
Geranium maculatum	Cranesbill	Root	26	5
Impatiens pallida	Jewel-weed	Leaves	24	8
Ptelea trifolia	Hop-tree	Bark of Root	.....	9
Xanthoxylum Americanum	Prickly-ash	Bark	25	5
Xanthoxylum Americanum	Prickly-ash	Berries	25	15
Ailanthus glandulosa	Tree of Heaven	Bark	35	6
Celastrus scandens	Staff-tree	Bark of Root	30	11
Euonymus atropurpureus	Wahoo	Bark of Root	40	18
Euonymus atropurpureus	Wahoo	Bark of Stem	25	7
Ceanothus Americanus	Jersey Tea	Root	30	5
Ampelopsis quinquefolia	Virginia Creeper	Bark of Root	25	7
Æsculus glabra	Ohio Buckeye	Bark	25	5
Rhus Canadensis	Fragrant Sumach	Bark of Root	.....	15
Rhus glabra	Smooth Sumach	Bark	20	2½
Rhus glabra	Smooth Sumach	Berries	.....	3
Rhus glabra	Smooth Sumach	Leaves	30	5
Rhus Toxicodendron	Poison Ivy	Leaves	30	5
Baptisia tinctoria	Wild Indigo	Root	25	3
Cercis Canadensis	Judas-tree	Bark	.....	8
Meliotus officinalis	Yellow Melilot	Herb	30	3½
Trifolium pratense	Red Clover	Flowers	25	6
Trifolium repens	White Clover	Tops	30	7
Agrimonia Eupatorium	Agrimony	Herb	25	5
Fragaria vesca	Common Strawberry	Leaves	25	5
Gillenia trifoliata	American Ipecac	Root	25	4
Potentilla Canadensis	Cinquefoil	Herb	30	6
Prunus serotina	Wild Black Cherry	Bark	15	4

COMPARATIVE TRADE LIST—*Continued.*

Botanical Name.	Common Name.	Part Collected.	Selling, Per Pound, Cents.	Buying, Per Pound, Cents.
Pyrus Americana	American Mountain-ash	Bark	24	6
Rubus villosus	Common Blackberry	Bark	20	2½
Rubus villosus	Common Blackberry	Bark of Root		3
Spiræa tomentosa	Hardhack	Leaves	30	6
Henchera Americana	Alum Root	Root	20	8
Hydrangea arborescens	Hydrangea	Root	20	3
Penthorum sedoides	Ditch Stonecrop	Herb	40	13
Hamamelis Virginica	Witch Hazel	Bark	23	4
Liquidambar Styraciflua	Sweet-gum	Bark	30	5
Epilobium spicatum	Fire-weed	Herb	35	10
Œnothera biennis	Evening Primrose	Leaves	30	5
Cicuta maculata	Spotted Cowbane	Leaves	40	12
Daucus Carota	Wild Carrot	Leaves	30	6
Eryngium yuccæfolium	Rattlesnake Master	Root	40	9
Heracleum lanatum	Cow-Parsuip	Root	35	10
Osmorrhiza longistylis	Sweet Cicely	Root	40	18
Aralia hispida	Bristly Sarsaparilla	Root	35	10
Aralia nudicaulis	Wild Sarsaparilla	Root	30	7
Aralia racemosa	Spikenard	Root	25	5
Cornus florida	Dogwood	Bark	15	3½
Cornus florida	Dogwood	Bark of Root		5
Cornus florida	Dogwood	Flowers	25	4
Cornus sercea	Kinnikinnik	Bark	30	5
Sambucus Canadensis	Common Elder	Bark	24	4½
Sambucus Canadensis	Common Elder	Flowers	25	7
Viburnum prunifolium	Black Haw	Bark of Root	35	7
Cephalanthus occidentalis	Button-bush	Bark		6
Galium Aparine	Cleavers	Herb	25	5
Mitchella repens	Partridge-berry	Herb	25	6
Achillea millefolium	Yarrow	Herb	35	4
Authemis Cotula	Dog-fennel, May-weed	Leaves	25	5
Arctium Lappa	Burdock	Leaves	30	4½
Arctium Lappa	Burdock	Root	30	5
Arctium Lappa	Burdock	Seed		6
Elephantopus tomentosus	Elephant's-foot	Herb		10
Erechthites hieracifolia	Fireweed	Leaves	25	5
Erigeron Canadensis	Horseweed	Leaves	30	4
Eupatorium aromaticum		Root	35	6
Eupatorium purpureum	Queen of the Meadow	Leaves	20	3
Eupatorium purpureum	Queen of the Meadow	Root		2
Eupatorium perfoliatum	Boneset	Leaves and Tops	35	3½
Lactuca Canadensis	Wild Lettuce	Leaves	30	5
Liatris spicata	Button Snakeroot	Root	40	6
Polymnia Uvedalia	Bearsfoot	Root	30	6
Rudbeckia laciniata	Coneflower	Herb	30	7
Senecio aureus	Golden Ragwort	Herb	35	3½
Silphium laciniatum	Compass Plant	Herb	30	3½
Silphium laciniatum	Compass Plant	Root		5
Solidago odora	Goldenrod	Leaves	25	5
Tanacetum vulgare	Tansy	Leaves	35	6
Taraxacum officinale	Dandelion	Herb	30	5
Taraxacum officinale	Dandelion	Root		7
Taraxacum officinale	Dandelion	Leaves		5
Lobelia inflata	Indian Tobacco	Herb	20	4
Lobelia inflata	Indian Tobacco	Leaves	30	8
Lobelia inflata	Indian Tobacco	Seed	35	12
Lobelia syphilitica	Blue Lobelia	Leaves	30	8
Chimaphila umbellata	Pipsissewa	Leaves	35	4
Epigæa repens	Trailing Arbutus	Leaves	35	3
Gaultheria procumbens	Wintergreen	Herb	35	4½
Rhododendron maximum	Great Laurel	Leaves	20	5
Diospyros Virginiana	Persimmon	Bark	25	3
Chionanthus Virginica	Fringe-tree	Bark of Root	35	4
Traxinus Americana	White Ash	Bark	20	4
Ligustrum vulgare	Privet	Leaves	30	6

COMPARATIVE TRADE LIST—*Continued.*

Botanical Name.	Common Name.	Part Collected.	Selling, Per Pound, Cents.	Buying, Per Pound, Cents.
Apocynum androsæmifolium	Dogbane	Root	35	7
Apocynum cannabinum	Indian Hemp	Root	40	8
Asclepias Cornuti	Common Silkweed	Rhizome	30	7
Asclepias incarnata	Swamp Milkweed	Rhizome	35	6
Asclepias tuberosa	Pleurisy-root	Root	35	5½
Gelsemium sempervirens	Yellow Jessamine	Rhizome	35	3
Spigelia Marilandica	Spigelia	Rhizome	40	.....
Frasera Carolinensis	American Columbo	.....	35	3
Gentiana ochroleuca	Sampson Snakeroot	Root	35	7
Gentiana quinqueflora	Five-flowered Gentian	Herb	.....	10
Sabbatia angularis	Centaury	Herb	30	7
Polemonium reptans	Abscess-root	Root	.....	13
Cynoglossum officinale	Hound's-tongue	Leaves	30	4½
Symphytum officinale	Comfrey	Root	35	5
Ipomœa pandurata	Mau-root	Root or Tuber	30	4
Datura Stramonium	James-town Weed	Leaves	35	5
Datura Stromonium	James-town Weed	Seeds	35	5
Solanum Carolinense	Horsenettle	Fruit	.....	5
Solanum Dulcamara	Bittersweet	Leaves	50	14
Solanum Dulcamara	Bittersweet	Twigs	25	5
Chelone glabra	Turtle-head	Leaves	35	8
Verbascum Thapsus	Mullein	Leaves	20	2½
Verbascum Thapsus	Mullein	Root	.....	5
Verbascum Thapsus	Mullein	Flowers	90	.....
Veronica officinalis	Speedwell	Leaves	30	8
Veronica Virginica	Leptandra, Culvers-root	Root	35	8
Epiphegus Virginiana	Beech-drops	Plant	25	5
Verbena hastata	Blue Vervain	Root	35	9
Verbena urticifolia	White Vervain	Root	23	8
Collinsonia Canadensis	Pink-weed	Rhizome	35	3
Cunila Mariana	Dittany	Herb	25	5
Hedeoma pulegioides	Pennyroyal	Leaves	35	4
Leonurus Cardiaca	Motherwort	Leaves	30	7
Lycopus Europœus, var. sinuatus	Bugleweed	Herb	30	6
Lycopus Virginicus	Bugleweed	Herb	35	3
Marrubium vulgare	Hoarhound	Leaves	22	4½
Mentha Piperita	Peppermint	Leaves	35	5
Mentha viridis	Spearmint	Leaves	35	8
Monarda fistulosa	Wild Bergamot	Leaves	35	8
Monarda punctata	Horsemint	Leaves	35	5
Nepeta Glechoma	Ground Ivy	Herb	25	4
Nepeta Cataria	Catnip	Leaves and tops	21	6
Pycnanthemum montanum	Mountain-mint	Leaves	30	6
Scutellaria lateriflora	Mad-dog Scullcap	Leaves	40	6
Chenopodium anthelminthricum	Wormseed	Seed	35	6
Chenopodium Botrys	Jerusalem Oak	Leaves	.....	6
Phytolacca decandra	Pokeweed	Berries	20	8
Phytolacca decandra	Pokeweed	Root	35	3
Polygonum acre	Water-Snakeroot	Herb	35	2½
Rumex Acetosella	Sheep-sorrel	Leaves	28	5
Rumex crispus	Yellow Dock	Root	35	3½
Aristolochia Serpentaria	Virginia Snakeroot	Rhizome	60	10
Asarum Canadense	Wild Ginger	Rhizome	35	15
Liudera Benzoin	Spice-bush	Bark	25	5
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Sassafras officinale	Sassafras	Bark of Root	35	5
Stillingia sylvatica	Stillingia	Root	35	4
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Humulus Lupulus	Hop	Strobeli	40	9
Ulmus fulva	Slippery Elm	Bark	25	5
Juglans cinerea	White Walnut	Bark of Root	35	3
Juglans nigra	Black Walnut	Bark	20	4½
Juglans nigra	Black Walnut	Leaves	25	5
Alnus serrulata	Smooth Alder	Bark	.....	3
Betula lenta	Black Birch	Bark	.....	3½

COMPARATIVE TRADE LIST—*Continued.*

Botanical Name.	Common Name.	Part Collected.	Selling Price Per Pound, Cents.	Buying Price Per Pound, Cents.
Quercus alba	White-oak	Bark	25	2
Quercus tinctoria	Black-oak	Bark	25	3
Quercus rubra	Red-oak	Bark	25	4
Populus balsamifera, var. candicans	Balm of Gilead	Buds	25	15
Salix alba	White Willow	Bark	22	4
Salix nigra	Black Willow	Bark	20	3½
Salix nigra	Black Willow	Buds	.....	7
Pinus Strobus	White Pine	Bark	25	3½
Tsuga Canadensis	Hemlock	Bark	25	1
Corallorrhiza odontorrhiza	Coral-root	Root	60	20
Cypripedium pubescens	Lady's Slipper	Rhizome	35	8
Aletris farinosa	Colic-root	Rhizome	50	10
Iris versicolor	Large Blue Flag	Rhizome	35	6
Dioscorea villosa	Wild Yam	Rhizome	35	4
Convallaria majalis	Lily of the Valley	Flowers	.....	50
Convallaria majalis	Lily of the Valley	Herb	.....	15
Convallaria majalis	Lily of the Valley	Root	35	9
Chamælirium Carolinianum	Devil's Bit	Rhizome	50	10
Smilax herbacea	Carriou Flower	Leaves	.....	10
Smilax Pseudo-China	Sarsaparilla	Root	.....	3
Erythronium Americanum	Adder's-tongue	Leaves	.....	22
Trillium erectum	Wake Robin	Rhizome	35	8
Veratrum viride	Am White Hellebore	Root	35	5
Acorus Calamus	Calamus	Rhizome	35	6
Arum triphyllum	Indian Turnip	Corm	35	6
Symplocarpus fœtidus	Skunk Cabbage	Corm	35	7
Agropyrum repens	Quick Grass	Root	25	6
Adiantum pedatum	Maiden Hair	Leaves	25	5
Osmunda regalis	Flowering Fern	Root	28	6
Polypodium vulgare	Polypody	Leaves	35	10

N. B.—Wherever substitutes have been recommended for the typical or normal drugs, in the descriptive list, f. i , Gillenia stipulacea for Gillenia trifoliata, Aspidium marginale for Aspidium Filix Mas, the consent of the drug-dealer must first be asked for, or goods may be rejected.

PLAIN DIRECTIONS TO THE COLLECTOR.

Bulbs, tubers and roots should be lifted from the soil without tearing and lacerating their tissues and cortical integuments. They ought to be cleaned from the adhering soil without washing or soaking them.

Leaves, flowers and entire plants should, soon after collecting, be dried on hurdles, in the shade, and packed for shipping in boxes or bales, before they get so dry as to crumble. The packages, if not immediately forwarded to the manufacturing chemist or wholesale druggist, should be deposited in well-ventilated warehouses.

Storage in proximity to promiscuous merchandise, especially raw hides, coal oil, or turpentine, must strictly be avoided. Moulding and infection with obnoxious odors spoil or deteriorate botanical goods.

Enterprising country merchants will soon find it profitable to assist and encourage this industry.

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